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SEPTEMBER 1987

HOW TO GET THE BEST FROM YOUR COMPUTER

PETER GERRARD ON SCROLLING
IAN WAUGH ON MUSIC
PETER McDONALD ON 'THINKING CAP'
JEFF MINTER ON THE AMIGA 500
IAN BENNETT ON PRINTERS
RAE WEST ON PROBLEMS
ANDY MOSS ON ADVENTURE
ANTHONY MAEL ON ARCADIA

+ JIM BUTTERFIELD'S MACHINE LANGUAGE

plus **MEGAREVIEWS!**

LAST NINJA ► ROAD RUNNER ► DECEPTOR ► HADES NEBULA ► WONDERBOY ► SLAP FIGHT ► CONVOY RAIDER ► ZYNAPS ► STAR PAWS ► REBOUNDER ► SHADOW SKIMMER ► AND MUCH MORE – PLUS **BUDGET GAMES SPECIAL!**

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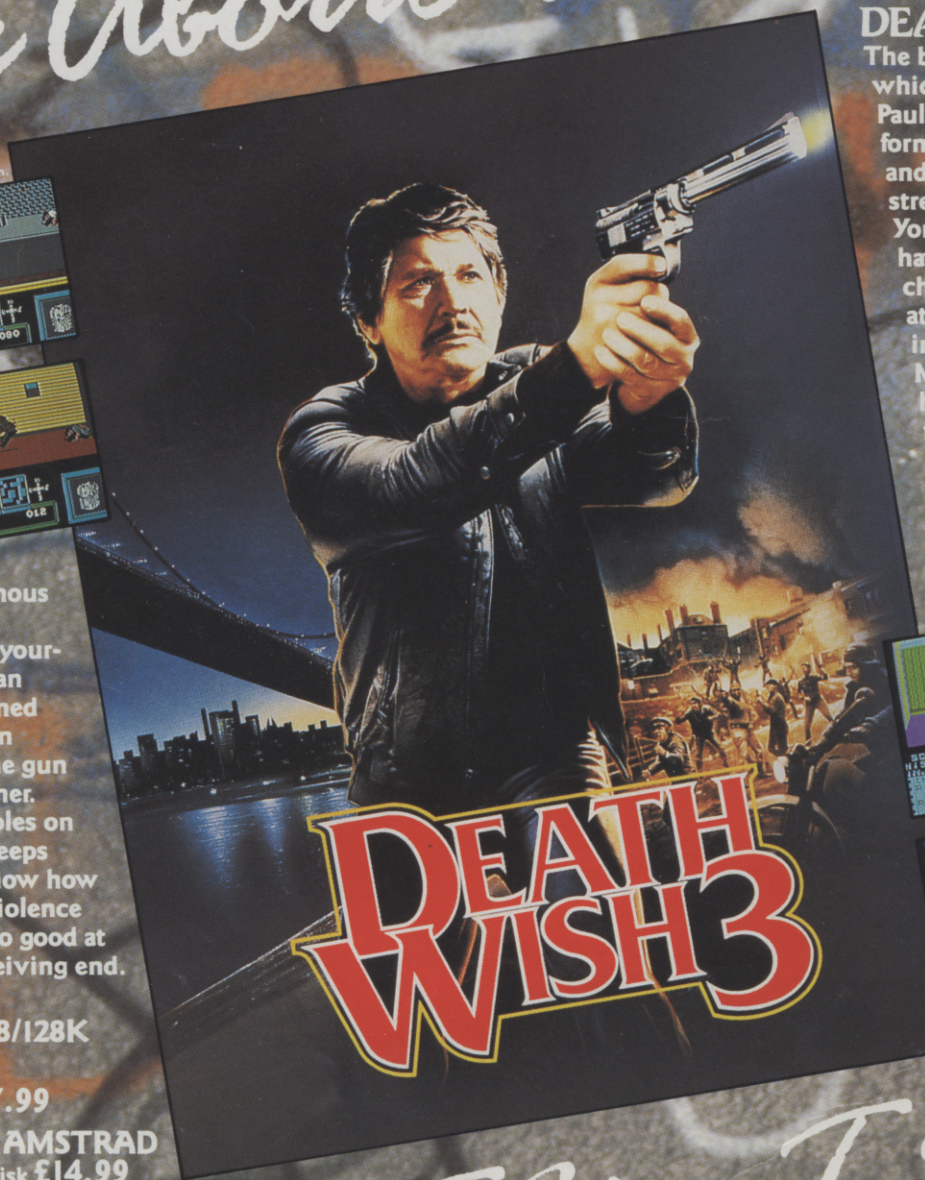
New York's Scum Are About To Take Ove

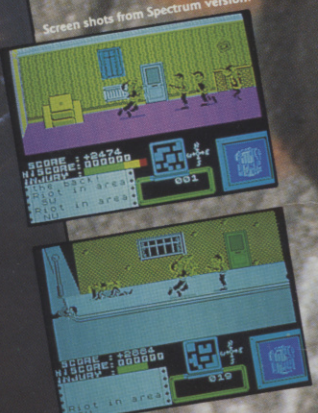
Screen shots from Commodore version.



DEATH WISH 3 .....

The big screen classic, in which modern day vigilante Paul Kersey wreaks his own form of revenge on the scum and filth that terrorise the streets of modern day New York. For too long the gangs have run wild, un-challenged in their peverted attacks and violations of innocent citizens. Muggings and robberies have become a daily feature of city life. So when the chief of police turns a blind eye you decide to take over where the law left off.

Screen shots from Spectrum version.



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Gremlin Graphics Software Limited, Alpha House, 10 Carver Street, Sheffield S1 4FS. Tel: 0742 753423

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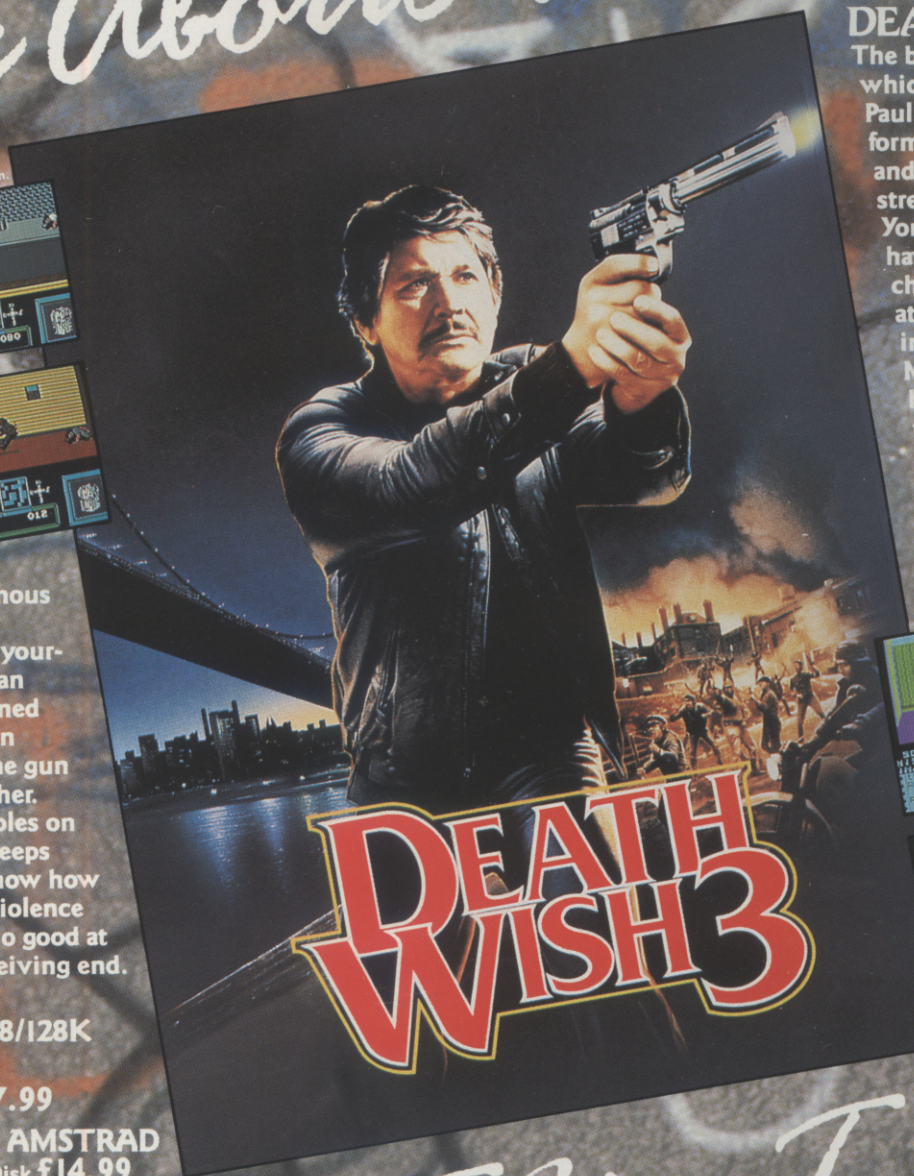

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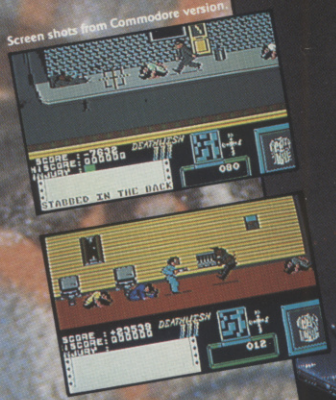

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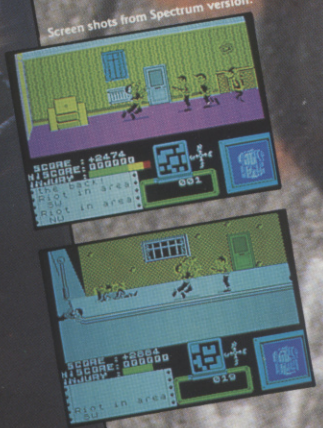

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COMMODORE COMPUTING INTERNATIONAL

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CCI View

Dear Reader,

In this month's CCI you will find the third and final voucher for our Free Software offer. We are happy to be able to offer you this time either cassette or disk. Our last offer brought thousands of requests and we are very pleased to be able to help so many of you get good quality software that you can use straight away at so little cost. As a result of the interest we are planning to introduce a way by which you can acquire the software of the programs that we publish in printed form in CCI. We know that lots of you sit through the laborious job of typing them in — and we sometimes get desperate calls from people who have gone through the whole fiddly process only to find that the damn thing doesn't load. I can tell you that we do check very thoroughly all the programs. Of course, human error can creep in anywhere. I personally don't believe that saying "To err is human but to really make a cock-up you need a computer." I think "GIGO" is closer to the truth — Garbage in, Garbage out. In other words, I am sorry to say, that error is often on the part of the person typing it in.

So, we hope to announce in the next issue of CCI, a way that all you midnight oil burning typers will get to bed earlier by simply taking a cassette or disk of the programs and letting the computer do the work. Marvellous this modern technology, isn't it?

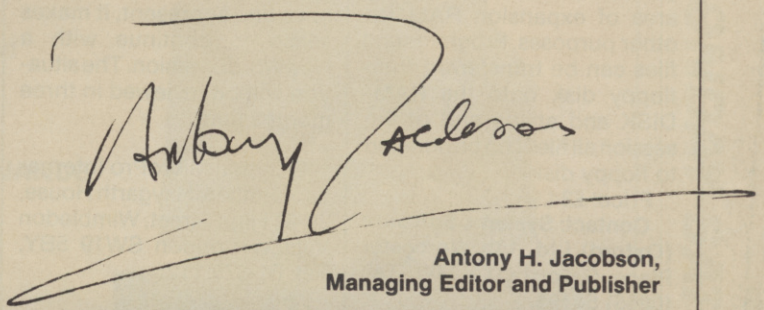
This month we are carrying some extra in-depth stories on companies involved in the Commodore marketplace. We find that readers like to know what is going on behind the scenes in the organisations that produce the products they buy. Especially in the companies that create the games that Commodore owners play, the personalities and the ways of going about making something terrific or terrible out of an idea are fascinating to most people. We hope we're giving you more than just the surface of the scene but really providing the sort of information that lets you understand the problems and the possibilities and helps you make an intelligent choice when it comes to spending your money. We believe that reviews though important are not enough. That people and the way they do things affect you through the products they create.

They've all got big plans — which include the 16 bit machines. And those who talk down the standards of games that are coming out now — "Lack of originality" is one cry that seems fashionable at the moment — have simply got short memories. A few months ago the games we are seeing today would have been thought outstandingly original and been welcome with highly quotable phrases. But now they are all boring . . . It's all been done before . . . Well, in any field of activity there are only a few really original talents. The rest just improve on the original creative idea. That is what happens in the computer field. No different from anywhere else.

There are a lot of high ratings of games in this issue of CCI. Everyone is fully deserved. We try to judge games on a constant but rising standard which keeps it fair to everybody. We attempt to give our space to games that deserve it.

And talking of using space more effectively. I've still only had one complaint about that atrocious Super Felix. Don't tell me you like him . . .

Yours sincerely,



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Telephone 01-278 0333
Editorial ext: 274
Advertising ext: 280/266
Subscriptions ext: 274
Published by Croftward Limited
Finsbury Business Centre
40 Bowling Green Lane
Lonon EC1R 0NE
Distributed by: Comag, Tavistock Road, West Drayton, Middx UB7 7QE
Printed by Chase Printers Group
Typesetting: Carlton Barclay

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...news...news...news...news

S.S. RAMDOS

Systems Software have bought out RAMDOS for use with the Commodore 128, 1700 and 1750 RAM expansion modules.

RAMDOS is a complete RAM based 'Disk' operating system which turns all or part of the expansion memory into a lightning fast RAM-DISK.

RAMDOS behaves exactly like a *much faster* 1541 or 1571 disk drive. All of the data on RAMDOS is held in expansion RAM and therefore RAMDOS is much faster than a physical disk drive. Under RAMDOS a 50k program loads in 0.5 seconds. RAMDOS uses all the memory in the expansion cartridge giving 512 free blocks with the 1700 and 2048 free blocks with the 1750. You can, however, specify any area of expansion RAM for other purposes. Programs and files can be transferred from floppy disk onto the RAM-DISK and at the end of the session all files can be dumped to floppy disk.

Price: £34.95.

Contact: Systems Software (Oxford) Ltd, 16b Worcester Place, Oxford OX1 2JW. Tel: (0865) 54195.

MicroPro's Newswords

MicroPro have announced that NewWord 3 (Concurrent) remains avaiable from New-Star Software Limited under a new arrangement between the two companies.

The product continues to sell at a recommended retail price of £260 (ex. VAT), with a Local Area Networking Extension for up to three workstations available at £349 (ex. VAT).

NewWord 2 also continues in manufacture at a recommended retail price of £99 (inc. VAT) for PC-DOS and CP/M86 versions.

John Speller, Managing Director MicroPro Intenational Limited explaining the arrangement said "As there is an obvious need for a Concurrent product and we do not have one at present, it makes sense to continue with a NewWord 3 version. The situation will be reviewed in three months time."

Contact: MicroPro International imited, Haygarth House, 28-31 High Street, Wimbledon Village, London SW19 5BY. Tel: 01-879 112.

Rhythm King Does it in Software!

The RHYTHM KING PRO drum machine cartridge for the Commodore 64 and 128 is, at £39.95, a really low cost alternative to a dedicated drum machine which might cost £300 or more.

If you want to hear some great digitised percussion sounds, but don't have even £39.95, then here's the answer — the software-only version of RHYTHM KING!

At £14.95 RHYTHM KING runs virtually the same software as RHYTHM KING PRO. It comes on disk or tape, with versions for both 64 and 128. The only difference is, you don't get a cartridge — because you don't need one!

The RHYTHM KING kits have been digitally sampled using the studio quality MICROVOX PRO sampler. The sophisticated filtering of MICROVOX has allowed Supersoft to create drum kits that sound great even when they're played back through the 64's SID chip!

Of course, sooner or later you'll probably win the football pools or inherit a fortune and then you'll be able to afford to upgrade to RHYTHM KING PRO. But in the meantime, you can really have some fun with the software-only version.

RHYTHM KING is available now, price £14.95 on tape or disk. Versions for 64 *and* 128 are included (the 128 version runs in 40-column 128 mode). RHYTYM KING PRO is still available at £39.95.

Contact: Supersoft, Winchester House, Canning Rd, Wealdstone, Harrow, Middx HA3 7SJ. Tel: 01-861 1166.

New VDU Screen Cleaner

Some cleaning products for VDU screens are not compatible with the optical coatings which are becoming increasingly common on high performance screens. Polaroid circular polarised filters and the screens for IBM 3278/79, DEC VT200 series and many high resolution CAD/CAM and graphics workstations all rely on the coatings.

Polaclear, now available through Tab, has been specially formulated by Polaroid for cleaning all glass and plastic optical surfaces. As it is free from conventional polishing agents that can leave streaks and from abrasives that can actually damage optical coatings, Polaclear is ideal for removing greasy fingermarks, dirt and dust not only from VDU screens but also from office copiers and camera and projector lenses. Polaclear's biodegradable formula also helps safeguard the environment.

Each Polaclear sachet contains a wet cleaner and a dry wipe to ensure a clean, clean surface every time. Dispensers holding 15 sachets are supplied compled with self adhesive strips so that they can be conveniently mounted precisely where they are needed — on the terminal itself.

Contact: Tel: (0604) 43677.

IMPORTANT ANNOUNCEMENT FROM COMMODORE

The new Amiga 500 has now been successfully launched! The heavy demand for the ultimate home and leisure computer, together with its wide availability across Europe has inevitably attracted many who wish to be part of its success. A consequence of this is that Amiga 500s, with specifications unsuitable for use in the UK, are being made available for sale by unauthorised dealers and distributors. Commodore UK are anxious for the public to be aware that these products, normally imported from Continental Europe, and in all cases without the approval of Commodore UK, have not undergone our UK specific Quality Controls, and at the very least will prove unreliable on our 240 volt mains supply.

The misuse of any Commodore product in this way will void the warranty offered by Commodore in the country of origin, and has no warranty rights in the UK, notwithstanding that it may be supplied with a UK Warranty Card. Further, some of these machines contain Amiga 1000 warranty cards which offer an on-site maintenance warranty on "Amiga Systems" which is specifically not applicable to the Amiga 500.

We strongly advise that you ask your dealer to give details of the support package offered with your Amiga 500, and that it has a full UK specification, and especially a 240 volt power supply. Specifically, machines supplied with 220 volt power supplies should be returned to the dealer from whom purchased. Amiga 500s offered for sale by any dealer below the manufacturer's Recommended Retail Price should be treated with caution. If in doubt, or if you wish to ensure that your dealer is authorised by Commodore UK to sell Amigas, please contact Commodore on 0628 770088.

Commodore UK has the prime objective of ensuring that the UK purchaser is backed by total support from a strong and well organised dealer base. We also have a duty to ensure that product sold in the UK is suitable for this market and that the best interests of end users are served at all times. We shall do everything possible to continue to discharge that responsibility.

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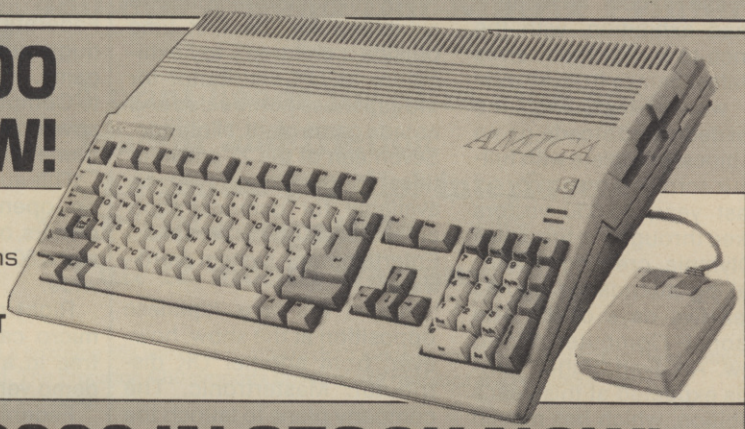

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Gamesworld at PCW Show!

Visitors to the PCW Show this year can expect an action-packed exhibition, with the chance to try for themselves the latest games from all over the world, including the latest dedicated arcade-game machines, complete with full-colour scrolling graphics.

Last year, 66,030 visitors clicked through the turnstiles at Olympia, creating record-breaking attendance figures on all five days of the The Personal Computer World Show. An even bigger turn-out is expected at this year's exhibition, which has moved from the beginning of September to start on Wednesday 23rd and end on Sunday 27th. The first two days are for business and trade visitors only, but the public are admitted from Friday 25th onwards.

Regular faces amongst the exhibitors include Activision, launching the Bangkok Nights successor to The Last Ninja, Ocean Software, Prism Leisure Corporation, US Gold, Mastertronic, Electric Dreams, Elite Systems, and Mirrorsoft. This year's show sees a number of major new exhibitors, many from abroad.

Electronic Arts has timed its major launch in Europe to coincide with The Personal Computer World Show, and will be introducing several new Amiga 68000 leisure software titles. Visitors will also be able to try out some of Electronic Arts' 60 existing packages, including the Deluxe series, plus Marble Madness, the Bard's Tale and Archon games; all previously available through Ariolasoft.

Simulation software house Microprose, third largest entertainment software supplier in the US, is also making a Personal World Show debut. The company, which set up its European headquarters in Gloucestershire last November, will be showing established titles such as F/15 Strike Eagle, Silent Service, and Gunship on the stand, as well as joysticks from Suncom and Exodus: Ultima III from Origin Systems. Wild Bill Stealey, the exhuberant President of Microprose and advisor to US Chiefs of Staff, also intends to be there, and challenge members of the public to play against him.

Toy manufacturer Mattel is exhibiting for the first time outside a children's toy exhibition, as UK distributor for the Japanese home video and arcade game giant, Nintendo. Seventeen of the 27 software titles in the range will be available for demonstration at the Show, on the Nintendo Entertainment system hardware.

Mattel will face Japanese opposition at the show, however, from another UK distributor: Mastertronic. The company plans to launch the Sega arcade games console at the show, as well as its own Arcadia machine, developed in conjunction with Commodore to incorporate the Amiga's B52 graphics board. The public will be able to try out popular games such as Outrun, Space Harrier and Choplifter on the Sega equipment, as well as games that Mastertronic is currently writing for the Arcadia system.

Opening times are 10.00 until 19.00 hours every day except Sunday 27th September, when the exhibition will close at 17.00. Tickets are available through Keith Prowse ticket agencies (tel. 01-741-9999), or at the door, priced £3 for the public, with discounts on groups of 10 or more.

Free Shades

5 hours free play on Shades — Micronet's mult-user adventure game — is to be given to all Micronet members. Shadists — the official name for Shades players — can use their 5 hours in any manner they wish. This may be in one block of 5 hours for 1 persona or spread out in smaller time blocks over the 2 personae an account can own.

More sophisticated monitoring and billing software will take care of the bill; almost £5.00 will be automatically deducted from every Shadist's game-time charges in the coming quarter. This offer stands for all Micronet members regardless of whether they've played before or not.

Micronet was launched in March 1983 and now has over 20,000 subscribers, making it the most successful information provider on Prestel.

Federation II — Free On-Line Demo

Federation II, Compunet's huge new multi-user space game, will become available to Compunet users, when the powerful new Compunet mainframe comes on-line.

This autumn Federation will be opened to all modem owners, on any micro, through some 80 access points nationwide.

Right now, owners of any micro can try the game for free in a limited single-user demo version.

Federation II is claimed to be the biggest multi-user game ever written. It can handle up to 128 players at once and has up to 2,500 locations, depending on the number of people playing.

Instead of the usual 'find treasure, earn points' gameplan, Federation is multi-layered. It has exploration, trading, fighting, strategy and politics and can be played on any or all of these levels.

A a traditional adventure, it has hundreds of locations to explore, puzzles to solve and treasure to find. Or players can build up a trading empire in the commodity markets of the galaxy — and in less reputable ways...

Codemaster Get the Boots

Boots shops — you know the ones who mixed up Barbarian and put it at number one in the charts — apparently like Codemaster more than Maria Whittaker. They are now selling the fast growing budget label's products for the first time. Codemaster is run by the Darling family, brothers Richard and David who won CCI's prize for best programmer's a couple of years ago. They have had notable success since splitting with Mastertronic and forming their own label. According to independent Gallup statistics they supplied to CCI Codemaster is number two, after Mastertronic, as the biggest selling games house in the UK. The figures were:

Of total games market (UK)

Mastertronic	has 14.8%
Codemaster	7.6%
US Gold	7.3%
Firebird	6.9%

According to Gallup's survey, Codemaster has jumped over both US Gold and Firebird in the last three months.

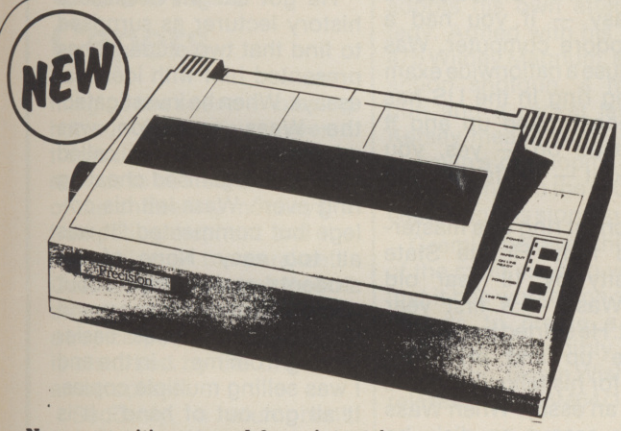
Codemaster claim too that BMX Simulator is the best selling game in the UK over the last seven months. They have also signed a contract to sell a minimum of half a million games in Germany, Austria and Switzerland over the next twelve months.

Are the Robots Coming?

Japan is shooting far ahead of other countries in the installation of industrial robots, according to a stuy by the research company, IDC. Present projections are that by the end of 1987, Japan will have installed around 141,000 robots in its factories. That is more than four times the estimate for the USA — 31,750. West Germany comes next with a projected total of 14,820 and the UK trails a long way behind with a tiny 4,470. The biggest uses for robotic aids in manufacturing are first, spot welding, then arc-welding and then assembly uses.

It appears from the statistics that the Japanese are likely to dominate the growth industries in the future even more than they do today for they are implementing high technology on a far greater scale than any other country.

Precision for Performance



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  Commodore Emulation
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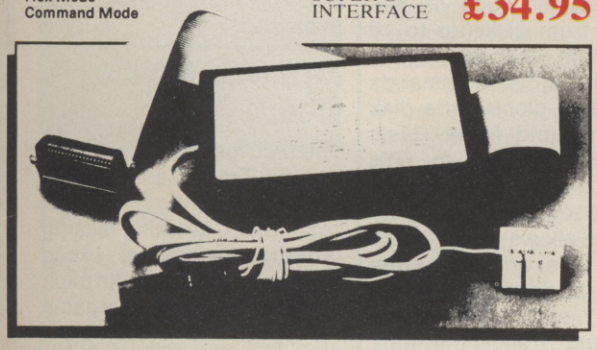
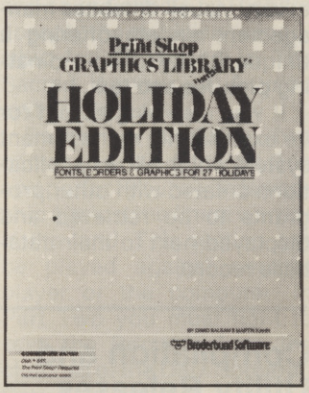
  Command Mode

The Super-G is a high-speed centronics parallel printer interface for Commodore computers. It features the ability to print the full Commodore character set, including all graphics, reversed text, and reversed graphics characters. Its built-in buffer allows it to print screen graphics faster than most other Commodore interfaces available today.

The Super-G features software and DIP-Switch control over many of its advanced features, including its 100% true emulation of the Commodore 1525 printer. This allows the Super-G to be compatible with more software and printers than other interfaces.

SUPER G INTERFACE **£34.95**





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Bubble Bobble — The Real Thing?

Firebird's hot new releases for the Autumn include the first of their coin-op licenses, Taito's chart-topper, 'Bubble Bobble'.

To describe this game is tough enough (2 Brontosaurs who blow bubbles and eat bananas??) but to play it is little short of pure obsession. 'Bubble Bobble' is Firebird claim, guaranteed to be one of the cutest games you've ever played and they say if you don't have fun with this one then it's time you took up something less strenuous.

The game is being programmed by Software Creations who received massive acclaim for Spectrum 'Sentinel' earlier in the year. First good news is that all versions will contain the full 100 screens of the original, and Firebird further guarantee that these screens will look and play authentically. If you hate coin-op conversions whose only similarity to the original is the cover artwork, you'll love 'Bubble Bobble'.

US Deal as AMS launches Commodore Desktop Package

After launching the AMX Mouse and Stop Press desktop publishing package for the Commodore 64 and 128 at the Commodore User Show in London's Novotel during June, Advanced Memory Systems have announced a major US distribution deal for the product.

AMS managing director Nick Pearson says: "We have sold this product to Electronic Arts, who are confident of achieving the same high level of sales in America as we have with similar packages in Britain and Europe."

Stop Press is seen as an excellent introduction to the world of desktop publishing, offering a wide range of facilities for the enthusiast, to produce newsletters, flyposters and other professional-looking printed material.

Mouse and Stop Press is £69.99. Stop Press only is £39.99.

Top US award for Superbase

Precision the leading UK business software house has carried off a major award at the Summer Consumer Electronics Show in Chicago.

Superbase Personal from Precision Software has won the blue ribbon of the event — the Software Showcase Productivity Award.

Though it is extremely rare for a British company to be singled out for an honour at this prestigious event, it is in fact the second time it has happened to Surrey-based Precision.

The first was when its Superbase 64 package carried off the same award in 1984.

At that time the company was best known in the Commodore market, notching up sales of more than 100,000 units of Superbase.

However, the latest award is for the Amiga, and PC versions of Superbase Personal.

The CES judges praised Superbase Personal for being a 'very visual' database management system offering a unique facility for co-ordinating pictures and text.

It was also singled out for its external file management system which allows applications created with other programs to be retrieved and displayed next to their database record.

Compilation and Utility Releases from the Power House

The Power House has released a compilation tape which features eight games for the price of £9.99.

The Commodore 64 compilation contains Gods and Heroes, Terminator, Aftermath, Return of the Space Warrior, Hercules, Sqij, Xenon Ranger and Gun Runner.

The Power House are also releasing two utility programs for Commodore 64. Both entitled, 'How to make the most of your computer', the utility features Vidcom and Ultrakit. It will cost retail £9.99.

The 64 Exam Aid

Getting through your exams at college in the United States was easy — if you had a Commodore computer. Was — because a nationwide exam cheating ring in the US has just been broken up and it was based on — yes, you guessed it — the faithful old 64.

The cheat ring was masterminded from Florida State University by 18 year old Mitch Wass — a first year student. He started by offering to type up and print out essays for his fellow students for $25 an essay. When Wass had the essays on disk, he realised that they were a marketable commodity. And he started selling them not only to students following the same courses at his own university but to others at an increasing number of campuses around the US.

He got caught because a history lecturer as surprised to find that two students has presented him with identical essays. When he investigated, the Wass operation was exposed. It has been called "the best organised cheating ring ever". Wass left his college but commented "It was all too easy. None of the students really cared about writing their own papers and they figured it was easier buying from me... in the end I was selling multiple copies. It all got out of hand". It is thought that Wass will be taking business studies at another college.

128 Boost

One of the problems with the Commodore 128 is that most of the software around runs in 64 mode — so you might as well have a 64!

Now Supersoft have come up with a way to give the 128 a boost when it's running in 64 mode — by fitting the new 128 PLUS kit. Just remove the existing 64 kernal Rom from its socket and plug in 128 PLUS. Then you can use the full keyboard in 64 mode — numeric keypad, both sets of cursor keys, ESC, CAPS LOCK, NO SCROLL etc.

Supersoft have also added extra features such as fast loading from disk (up to 10 times faster when the 1571 is used), quick disk commands (e.g. @$ to display the disk directory), and faster Basic (programs run up to 60% faster)!

For absolute compatibility 128 PLUS allows you to switch back to the original kernal Rom — just depress the 40/80 DISPLAY switch before you power up. About the only thing that 128 PLUS doesn't do is make the tea — but maybe Supersoft are working on that too!

128 PLUS costs £19.95 and is available by post from Supersoft or from specialist computer dealers.

Holiday Madness! Ariola goes £4.99!

Beat those British blues with Reaktor's special holiday offer!

Reaktor are releasing three games at £4.99 each! Keep your temperature high and your spending low with this "unique, never-to-be-repeated offer!" (Ariolaspeak!)

Deadringer

3 dimensional racing in space, with radar and rear-view indicators to help you watch for deadly attacks — switch tracks instantly to avoid walls and to find the high scoring computer car.

Mountie Mick's Death Ride

The McClusky gang are raiding the Trans-Canadian Express — Mountie Mick must catch them, avoiding leaking tankers, grenades, loose mooses and coping with pitch black tunnels. Hilarious game with special hand cart feature to move from train to train.

Killer Ring

If it moves, shoot it — if it doesn't shoot it anyway! Blast your way through the levels until you reach the spaceman —and then blast him away too!

Commodore 64, cassette.

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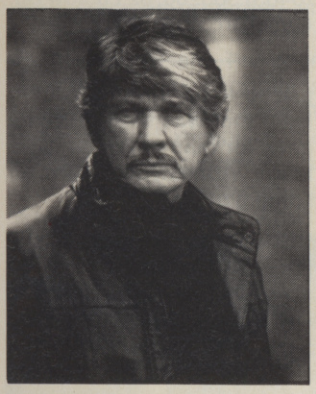
Jack Nipper's Coconut Capers

Imagine the scene — blazing hot sun beats down over a tropical forest, the only sounds to be heard are those of the chattering monkeys, a trumpeting elephant and the screeching of the parakeets. Gazelles graze peacefully and zebras are sipping gently from a tropical pool when the peace is disturbed by the drone of an aeroplane.

Suddenly, a triumphant, blood blood curdling yell, swiftly followed by the sound of a thud, shatters the stillness — Jack has landed!!

There's plenty for our fugitive to get up to in the jungle and you can bet that he finds it! Only having very short legs, Jack finds that swinging on the ropes is a very quick means of travel. This comes in handy when being chased by marauding natives; Jack gets his own back on them though by either bouncing coconuts on their heads or throwing spears at them!



Death Wish III

The computer software right to the blockbuster film epic Death Wish, starring Charles Bronson, have been snapped up by top software development hosue Gremlin.

The movie stars Charles Bronson as Paul Kersey, New York's own unique brand of justice-fighter who's out to rid New York of the punks and creeps who infect the streets. Convinced that the Chief of Police is powerless against the underworld, Kersey adopts his own attack strategy. Armed with his famous 475 Wildey Magnum, a pump-action shotgun, a machine gun and a rocket launcher, Kersey means business, and Gremlin's development team are currently in the process of capturing this story on screen.

Gremlin believes this is one of the most exciting ventures that it has worked on so far. It intends to create a game, featuring incredibly lifelike animation. Death Wish will be released for CBM64/128.

New from D.I.

Digital Integration tell us they are leaders in the air, winners on the ground.

They are releasing three new entertainment packages; F-16 Combat Pilot — Fixed Wing Simulation. The most advanced and authentic simulation of General Dyanmics F-16. You use a complex payload of avionics to search, locate and destroy targets irrespective of weather conditions, control a variety of modern weaponry including AIM Sidewinder and AMRAAM missiles. AGM Maverick, laser guided bombs and 30mm cannon to survive and win. C64

ATF (Advanced Tactical Fighter) — a Brainy arcade extravaganza. This portrays the low flying and virtually undetectable Lockheed YF-22A. You pick up intelligence information, choose a variety of targets and test your mind and dexterity in a hostile world. A 3D generated relief landscape for the ultimate in strategy and arcade action. C64.

Bobsleigh — a simulation of an ever more popular Winter Olympic sport. You choose your equipment and back-up support within the constraints of sponsorship funds. Driver's view projects a feeling of speed and cornering, and you can compete on World Cup and Olympic tracks. C64.

Contact: Digital Integration Limited (0276) 684044/684959.

Another Amiga Barbarian

Palace Software have announced the release of Barbarian, which they claim will be the most realistic and exciting combat game yet seen on a home computer.

Not be confused — we bet it is! — with Psygnosis' Barbarian, Palace's was created by Steve Brown, who was responsible for the monster hits Cauldron and Cauldron II, Barbarian features music and sound effects by Richard Joseph, the musician responsible for the sound in The Sacred Armour of Antiriad and Cauldron II.

Barbarian contains two games in one. Load Part One and perfect your swordsmanship against the finest warrior in the land. This section can be played against another player or the computer. In Part Two you must fight to save the Princess from the clutches of the Dark Sorcerer, Drax.

Sixteen different moves, including headbutt, kick and webb of death, set Barbarian apart from any previous sword-fighting game. Other effects, such as the decapitation, say Palace, must be seen to be believed.

Barbarian contains all the classic elements of the word and sorcery genre; Marvel at the muscular barbarians! Gasp at the beautiful Princess! Hiss at the evil sorcerer! Cringe at the hideously deformed dwarf. Leer at the packaging which features beautiful Page 3 model, Maria Whittaker and got the 64 version banned from Boots shops. Amiga price £40.99.

Excelerator Accelerates

Evesham Micros have announced an upgraded version of the Excelerator disk drive for the Commodore 64 which Evesham believe is more compatible with Commodore software than any of Commodore's own disk drives. Because of this, and the price, Evesham believe Excelerator sales will exceed the sales figures of the Commodore disk drives.

The Excelerator, which retails for £159.95, is £40.00 cheaper than the latest Commodore model. The original version has already been highly acclaimed and it has been said that because it is both neater and smaller than the Commodore disk drive it would be a more attractive purchase, even at the same price.

Initial sales of the Excelerator have been limited by supply caused by early production difficulties and a customs' dispute. These problems have now been solved and the upgraded version is available in almost unlimited quantities.

Richard Austin, Evesham Micros' Managing Director, commented "We expect to sell 5,000 drives a month in the foreseeable future. There is no reason why our disk drive should not sell in greater quantities than Commodore's own."

Evesham's Richard Austin excelerates his drive.

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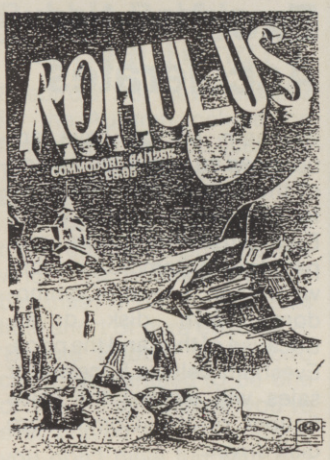


Romulus Poster

The poster for the recent Quicksilva game Romulus has attracted plenty of attention whenever it has been seen. It has been seen decorating some interesting places and features we hear on top games players' walls. Quicksilva have kindly offered copies of the Romulus poster to any CCI readers who want to brighten up their homes — and its *totally and absolutely free!* All you have to do is send a stamped addressed envelope to hold a 60 x 40cm poster, to CCI Romulus Poster, Inter-Mediates Ltd, 2 South Block, The Meltings, Riverside Way, Sawbridgeworth, Herts. CM21 9PG — and the amazing poster will reach you as soon as the Post Office can manage it. Viva Romulus!

Not Down The Tube

The Tube, Argus Software's much heralded forthcoming release, is reputed to be going to win back fans for what was once one of the top games houses, Quicksilva. Argus new M.D. Stephen Hall has big plans for the whole set of Argus labels. Bugbyte is making progress as a budget house. Lothlorien has had some recent success and The Tube is likely to make a lot of people sit up and take notice of Argus' new regime. As part of one of the UK's most powerful companies B.E.T., in theory Argus is second only to the BT labels in the resources and hard cash it can call upon. It is thought that international developments may be on the way that could put Argus back with the leaders in the software industry.

Kidsplay Charity Compilation

One of the most worthy causes of the moment is the Battle against Cruelty to Kids — BACK which is being supported by the software industry. A compilation of hit games is being issued. It's a good cause and a great compilation called Kidsplay, why not buy it?

Mega Martech

Martech is releasing Mega Apocalypse for the Commodore 64/128 for £8.95 cassette or £12.95 disk. A Crazy Comets style fast and furious shoot 'em up, your task is to seek out strange and exciting new worlds and then blast them to pieces. Boldly go where no man has gone before — and then wipe it out!

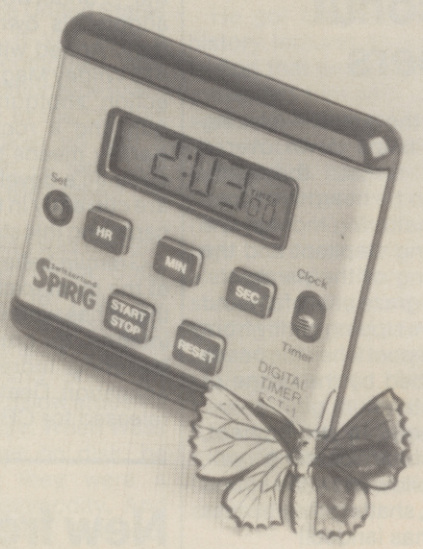
If you thought the universe was pretty terrific this game will try to convince you it's cannon fodder. Mega Apocalypse features a 1 player, 2 player, dual allies or dual enemies option. The game has five channel sound with digitised speech and sound effects; 360 degree fire power; collectable pods to enhance your spacecraft shield, fire power, manoeuvrability and speed. In addition, Mega Apocalypse features a high score, ultra score and Galactic Hall of Fame.

The code and sound has been programmed by Simon Nicol, with graphics by Bob Stevenson and music by Rob Hubbard.

Mega Apocalypse was play tested at a special event attended by CCI's Tony Horgan. So knocked out was he by Mega Apocalypse that he failed to return .

CCI's TH rushed home to play Crazy Comets all night just to keep up the buzz. At least that was the excuse he gave for being late next day. Mega Apocalypse must be some game!

T. Horgan Mega-Apocalypting



Cobonic Timer

Cobonic Limited have announced a battery operated electronic timer, incorporating a true Stop-Watch, a Countdown/Alarm/Count-up Timer, and a Clock. The Timer has a memory and does not need to be keyed in again for repetitive identical timer settings. The multipurpose clip attaches either by magnetic force to metallic surfaces, by a spring loaded clip to a writing pad or simply angular standing on a desk. The timer sells for £17.50, but during a three month introductory sale period Cobonics is offering it at a 20% discount at £14.00

Contact Cobonic, Guildford (0483) 505260, 32 Ludlow Rd, Guildford, Surrey GU2 5NW.

The Legacy of Heorot

J Pournelle & Barnes
Victor Gollancz £10.95

Avalon is an island on Tau Ceti Four (nothing to do with the CRL game). A hundred and sixty star-travellers — all brilliant scientists, naturalists, agronomists, biologists, etc. — who have landed there, begin to build a settlement on the plant. For Avalon read Eden, for the island, it seems, has everything needed to provide a prefect 'new world' for the colonists. Rivers, mountains, lakes, woodlands, even the fowls of the air — which include a kind of winged reptile called a Pterodon — and the fish in the waters, of which the largest is very like a salmon, are harmless and/or edible.

But, of course, as with every Eden there has to be a serpent, although the one in Avalon is slightly different from your common-or-garden snake. This one weighs about a quarter of a ton, is built like small tank, has an iron hide, is as intelligent as a gorilla and, when roused, whizzes about the planet like a supercharged rocket. It looks like a cross between a crocodile and a small dinosaur and has razor-sharp teeth and a wickedly spiked tail. And it eats anything and I mean ANYTHING, although, naturally, it develops a preference for humans once it's tasted them. Altogether not the sort of creature one would wish to meet on a dark night, which seems to be its preferred hunting time.

One other slight difficulty that besets the colonists is that they had to be frozen for a hundred and five years while their space ship travelled the heavens and because of a 'hitch' in the program some of them, have suffered 'HI', Hibernation Instability. Which means that those affected have lost vital brain cells and are not quite as brilliant as they used to be. One, Ernst Cohen, who had been the solar system's leading authority on reproductive biology, now has the mind of a child, others — luckier than he — have only had slight memory impairment.

The 'Adam' in this imperfect Eden is Cadmann Weyland, pilot and soldier, the only one of the colonists to see the dangers when, after eight months of safe living, they begin to get slack in their safety procedures. And Eve? There are two. One is biologist Sylvia Faulkner, married to Terry and pregnant with his child, but in love with Cadmann, the other is Mary Anne Eisenhower, with whom Cadmann lives. (Not for nothing is he called 'Cad' for short!)

How the colonists manage to save their other 'Eden' which, by the way, they've called Camelot, from the bloodthirsty — in more ways than one — 'grendels' is the main plot of the 'Legacy Of Heorot'.

A well-written novel should carry the reader along on a tide of interest, this book does — up to a point — but after the third or fourth, 'Here come the grendels' or 'Let's go get the grendels', the tide begins to ebb somewhat. Like the scientists suffering from 'HI' the 'The Legend Of Heorot' is slightly flawed. Cut by a third it might have been perfect.

The Coming Of The Quantum Cats

Frederick Pohl
Victor Gollancz (£9.95)

Imagine a story in which there are four heroes who are all identical and who all have variations of the same name. Add to this three lookalike heroines — one of whom may be a villainess — and three minor characters all of whom are also portrayed in triplicate. Confused? That's only for starters.

'The Coming Of The Quantum Cats', has all these, plus forays into several universes — all different, but basically the same — where, as the story progresses, all the characters are found, sometimes separately, sometimes together. It sounds, and is, involved, but strange as it may seem it does — eventually — make sense.

The story is based on one of the hypotheses of quantum physics, that every alternative choice in our world gives rise to different universes, one for every possible decision which MIGHT have been made. So that there could be uncountable billions of universes — some differing only minutely from one another, others vastly divergent — which exist side by side, impervious to each others existence. Don't worry if you don't understand quantum physics — who does? — you'll soon get the hang of the story.

So we have one world in which the President of the USA is not Ronald but NANCY Reagan; another in which England is the centre of a militant Bolshevik commonwealth of federated republics; and in a third John Kennedy was not asassinated in Dallas but is a venerated 'elder statesman', while his brother, Edward, drowned at Chappaquiddick.

The hero(es) of this complicated, but extremely well-written story, is/are Dominic DeSota and, depending upon which chapter you're reading, he's a mortgage salesman, a United States senator, an army major or a scientist, and he/they are all caught up in a kind of 'war of the worlds', only this time it's the same world but on differing parallels. The scientist DeSota is co-inventor of a 'portal' which enables people from one world to 'go through' into another, unfortunately all this traipsing to and fro causes what's called a 'ballistic recoil' which, will eventually blow everything up. At least, I think that's what would have happened! Luckily, there's yet another universe which is monitoring all this activity and steps in to try and avert the inevitable catastrophe.

Frederick Pohl is one of science fictions most expert story-tellers and to create such a complicated plot and still hold the readers attention is the mark of a master. And it DOES hold your attention although, I must admit, that occasionally I had to glance back to the chapter headings to see what time it was. No, not in our world but in the fictional one.

Why Quantum CATS? It's something to do with the Heisenberg uncertainty principle in which a cat is put in a box with a radioactive particle, and it's all explained on page 56. But don't worry if you can't understand it, I couldn't, either, but I still enjoyed the story!

D.M.

FIGHTING WORDS

The Jeff Minter Page

It's been a busy month. I've been working hard on Colourspace II, bought a house in Wales, been to what was possibly the worst ever Commodore show, and bought a new computer, amongst other things...

First, the new computer. I decided that to stay in touch with all things Commodoreian, and size up the Big C's challenge to Atari properly, I ought to invest in an Amiga A500. So off I trotted to London, and returned home with a large box of Amiga and a slightly radioactive Access card. Had a bit of a rough start though — on that first Amiga, the modulator stubbornly refused to display more than three shades of blue (which resulted in the Workbench being displayed in a rather nasty shade of green), the PrtSc key fell off, and worst of all, a blitter fault meant that whenever you moved or selected any icons, every 16th pixel of the data being moved got lost somewhere, which meant that all the images were broken up by unsightly vertical lines. Undaunted, I returned to London, and returned again with another Amiga, which is functioning perfectly and is even now sitting atop my VCR next to the Commodore 128.

My impressions of the new system? Well... yeah, OK, I admit it, it's the best thing since silicon slices. It's a lot more accessible than the old A1000, no huge bulky system unit and dangling keyboard to get in the way, it looks like a cross between the Commodore 128 and an Atari 1040ST and is a lot more acceptable in a 'home' environment than its predecessor. (One gripe though — whoever designed that modulator wants shooting, with big bullets. If you have no monitor, and let's face it, at upwards of £250 for a decent analogue RGB most home users won't have one, you have to plug in an ugly elongated plastic box which projects dangerously from the monitor socket in back of the machine. I say 'dangerously' because A500s have been known to blow if the modulator is removed with power on, and this little beastie would be S-O easy to knock out of its socket if someone moved the Amiga. That modulator socket has screw recesses to allow you to fix cables into it securely, so why not provide finger-screws on the modulator so that at least you can be sure the damn thing won't fall out?). No, I'm sorry, but the modulator is a kludge if ever I saw one. It's risky, it spoils the sleek lines of an otherwise very together machine, and besides, there's tons of room inside, so why not build in anyway? I thought Commodore learned their lesson with the old Vic-20.

While I'm nitpicking, putting the On/Off switch on the power supply wasn't too smart, either. Look, the A500 is a lovely, slick, groovy home machine, while the PSU is an ugly white brick which most people will want to install somewhere well out of sight and leave there. So now when you want to turn off your Amiga you have to go grovelling around on the floor looking for the damn PSU so you can reach the switch, and I bet some naughty users are gonna be tempted to yank the power cable right out the back of the Amiga, which is a definite no-no.

Just a couple of small design flaws, but if they'd been considered properly before the A500 was released they'd probably save a few blown computers from people being careless. Shouldn't give them the chance to be careless.

But when the nitpicking's all done, I must confess that I'm still madly in love with my A500. It's great, it's groovy, and with a bit more software around than at the moment it could even be worth the extra dosh that it costs more than the trusty ST. The keyboard's nice, the display out of that godawful modulator is quite acceptable (I put mine into my old Commodore 1701 composite rig and it's OK, and TV display's quite good too) although if you're going to get into any serious programming and need to see your text clearly for long periods at a time, you'd need a good RGB set. And some of the software will blow your nuts off.

Take, for example, DPaint II, which is getting a hammering from all my mates just now. It's a classic case of 'technology triumphing over talent'. Even the most halfhearted doodler can product stunning artwork, with complex shading FX, perspective stuff, stencils, symmetry, definable brushes, blah, blah, the list is endless (and tremendous FUN). Mind you, it still Guru's out occasionally, but even so, it's ultragroovy.

Mind you, something that Amiga developers need to handle carefully is the case of file-selection from within an application. There doesn't seem to be a standard way of presenting a 'file selector box' like the Gem one on the ST, and some programs just present the user with a stark 'enter-filename-in-this-box' type approach, and when an AmigaDos filename can be something like 'df0:mystuff/wordproc/thingy.doc' it's easy to lose track. The whole thing about the Intuition interface is that it should save the user from all that grovelling about in AmigaDos. The FSB in DPaint II is an example of doing it properly — more of the same from other developers, please?

Running out of space, here, so a quick word about the Commodore show — it was AWFUL. Seeing it from a punters' eye view made me pretty peeved, I can tell you. The Novotel staff seemed to have been to the Kleine Reichsfuhrer Training Stalag for refresher courses, and were actively hostile on occasion. I couldn't even get out the door on the upper level, t go for a pee! There was an age limit on the Amiga display — I mean, c'mon guys, some of those kids know more about programming than you ever will, and denying them access to Amiga is pretty dumb (no age limit on the ST...). I went up with a copy of Revenge II, and went along to the Commodore Arcade, where, said the blurb, we could see all the latest developments in game software. Latest developments? HERO? Pastfinder? Molest me not with this nonsense... and when I tried to demo RevII to an enthusiastic group of people, I'd only got as far as starting the first wave when a Commodore bod came by and told me, in as many words, to sling my hook. Said that people had paid to put games here and I hadn't. Look, sez I, I'll be ten minutes and then away, and besides, all these good folx want to see what I got. No go sez the official, and resets the machine... and then wastes the next ten minutes attempting to load a C64 game into a C128 in 128 mode! (When questioned as to whether he actually knew how to work a Commodore computer, the guy looked puzzled, and sez no, he was just from the Accounts department)...

Yep — the Commodore show needs some work. People want to see new stuff, see what's happening, not just a billion stands selling cheap disks. Hell, if I want that sort of stuff I could save my three quid and take a trip down Tottenham Court Road. And Commodore staff should take a lesson from the Amiga A500 — get user-friendly, guys. And, dammit, get developer-friendly, too. Atari once gave me, for free, a stand for a week at a prestigious US computer show, complete with an ST, disk and colour monitor — and Commodore won't even lend me a humble '64 for ten minutes — Sheesh.

Oh yeah — go out and buy the new Roger Waters album 'Radio KAOS'. It is, quite simply, the best album since The Wall.

EASY MUSIC

Commodore 64 Music Part 2

Ian Waugh Lifts the lid of SID with our continuing series on easy music on the 64

If you read Part 1 of this series in the June issue of CCI (of course you did!) you'll have an idea how music is put together. Now you need to know how SID works. Here's a brief overview.

SID can produce three independent synthesiser voices. Each voice can produce four waveforms and each has its own envelope (ADSR) generator to control voice production. Each voice can be sent through a filter which can be set to one of four filter types and there is provision for ring modulation and sync effects. One volume control governs the overall sound output.

We can think of Sid as a 'control panel' which is laid out as in the diagram. Don't try to understand and rememer all the information presented here but **do** keep these articles handy.

SID Register Map

The figures in the address column refer to the area of memory SID occupies and t make it do anything we must POKE values into these address. Rather than use those big numbers all the time it's usually more convenient to refer to them as SID + a number, 0 to 28. As we'll be working at bit level, the bits are numbered along the top.

The map falls into five sections. The first three are almost identical in their function and we will begin by looking at the first seven rows which control voice 1.

Registers 0 and 1: FREQ LO BYTE/ FREQ HI BYTE

These control the pitch of voice 1. The pitch is programmed as a 16 bit number which must be split into two sets of eight bits, ie two bytes, called the high byte and the low byte. Most of the 16 bit numbers we will use are shown in the keyboard diagram.

Registers 2 and 3: PW LO BYTE/PW HI BYTE

Bits 4 to 7 in register 3 are not used. The other bits can be used to form a 12 bit number (PW0 to PW11) which controls the pulse width or duty cycle of the pulse waveform and must be split into a high and low byte.

DECIMAL		128	64	32	16	8	4	2	1		
BIT		7	6	5	4	3	2	1	0		
ADDRESS	SID +									REG FUNCTION	REG TYPE
						VOICE 1					
54272	0	FQ7	FQ6	FQ5	FQ4	FQ3	FQ2	FQ1	FQ0	FREQ LO BYTE	WRITE ONLY
54273	1	FQ15	FQ14	FQ13	FQ12	FQ11	FQ10	FQ9	FQ8	FREQ HI BYTE	WRITE ONLY
54274	2	PW7	PW6	PW5	PW4	PW3	PW2	PW1	PW0	PW LO BYTE	WRITE ONLY
54275	3	-	-	-	-	PW11	PW10	PW9	PW8	PW HI BYTE	WRITE ONLY
54276	4	NOISE				TEST	RING MOD WITH VOICE 3	SYNC WITH VOICE 3	GATE	WAVEFORM CONTROL	WRITE ONLY
54277	5	ATK3	ATK2	ATK1	ATK0	DEC3	DEC2	DEC1	DEC0	ATTACK/DECAY	WRITE ONLY
54278	6	SUS3	SUS2	SUS1	SUS0	REL3	REL2	REL1	REL0	SUSTAIN/RELEASE	WRITE ONLY
						VOICE 2					
54279	7	FQ7	FQ6	FQ5	FQ4	FQ3	FQ2	FQ1	FQ0	FREQ LO BYTE	WRITE ONLY
54280	8	FQ15	FQ14	FQ13	FQ12	FQ11	FQ10	FQ9	FQ8	FREQ HI BYTE	WRITE ONLY
54281	9	PW7	PW6	PW5	PW4	PW3	PW2	PW1	PW0	PW LO BYTE	WRITE ONLY
54282	10	-	-	-	-	PW11	PW10	PW9	PW8	PW HI BYTE	WRITE ONLY
54283	11	NOISE				TEST	RING MOD WITH VOICE 1	SYNC WITH VOICE 1	GATE	WAVEFORM CONTROL	WRITE ONLY
54284	12	ATK3	ATK2	ATK1	ATK0	DEC3	DEC2	DEC1	DEC0	ATTACK/DECAY	WRITE ONLY
54285	13	SUS3	SUS2	SUS1	SUS0	REL3	REL2	REL1	REL0	SUSTAIN/RELEASE	WRITE ONLY
						VOICE 3					
54286	14	FQ7	FQ6	FQ5	FQ4	FQ3	FQ2	FQ1	FQ0	FREQ LO BYTE	WRITE ONLY
54287	15	FQ15	FQ14	FQ13	FQ12	FQ11	FQ10	FQ9	FQ8	FREQ HI BYTE	WRITE ONLY
54288	16	PW7	PW6	PW5	PW4	PW3	PW2	PW1	PW0	PW LO BYTE	WRITE ONLY
54289	17	-	-	-	-	PW11	PW10	PW9	PW8	PW HI BYTE	WRITE ONLY
54290	18	NOISE				TEST	RING MOD WITH VOICE 2	SYNC WITH VOICE 2	GATE	WAVEFORM CONTROL	WRITE ONLY
54291	19	ATK3	ATK2	ATK1	ATK0	DEC3	DEC2	DEC1	DEC0	ATTACK/DECAY	WRITE ONLY
54292	20	SUS3	SUS2	SUS1	SUS0	REL3	REL2	REL1	REL0	SUSTAIN/RELEASE	WRITE ONLY
						FILTERS AND VOLUME					
54293	21	-	-	-	-	-	FC2	FC1	FC0	FILTER CUTOFF LO BYTE	WRITE ONLY
54294	22	FC10	FC9	FC8	FC7	FC6	FC5	FC4	FC3	FILTER CUTOFF HI BYTE	WRITE ONLY
54295	23	RES3	RES2	RES1	RES0	FILTEX	FILT3	FILT2	FILT1	RESONANCE/FILTER	WRITE ONLY
54296	24	3 OFF	HP	BP	LP	VOL 3	VOL 2	VOL 1	VOL 0	FILTER TYPE/VOLUME	WRITE ONLY
						MISCELLANEOUS					
54297	25	PX7	PX6	PX5	PX4	PX3	PX2	PX1	PX0	POT X	READ ONLY
54298	26	PY7	PY6	PY5	PY4	PY3	PY2	PY1	PY0	POT Y	READ ONLY
54299	27	O7	O6	O5	O4	O3	O2	O1	O0	OSC3 OUTPUT	READ ONLY
54300	28	E7	E6	E5	E4	E3	E2	E1	E0	ENV3 OUTPUT	READ ONLY

Register 4: WAVEFORM CONTROL

Bit 0-GATE: This controls the envelope (ADSR) generator for voice 1. When it is switched on (ie set to 1), the envelope generators is triggered or 'gated on' and the ADSR cycle begins. When it is reset to 0 the release phase of the ADSR cycle begins. To produce a sound, this bit must be used in conjunction with the ADSR generator (registers

5 and 6) and waveform selection bit(s) although it can be activated alone (see register 28).

Bit 1 — SYNC: This synchronises the fundamental frequency of oscillator 1 with that of oscillator 3. Sync can produce some very complex harmonics and the effect is difficult to describe (so I won't try) but you'll be able to hear the effects in later programs.

Bit 2 — RING MOD: When set this replaces the triangle output of voice 1 with a ring modulated combination of voices 1 and 3. Ring modulation can be used to produce gongs, chimes and other metallic sounds.

Bit 3 — TEST: This resets and locks oscillator 1 at zero until the bit is cleared by setting it to 0. The nose waveform is reset and the pulse width set to 0. This bit is normally used for testing purposes, hence its name, and we will have little use for it in sound production.

Bit 4 — TRIANGLE: This selects the triangle waveform. It has few harmonics and produces a flute-like tone.

Bit 5 — SAWTOOTH: The sawtooth waveform contains many harmonics and has a ready, string/brass quality.

Bit 6 — PULSE: Selects the pulse wave. The width of the pulse is determined by registers 2 and 3. A value of 2048 in these registers will produce a square wave which sounds like a clarinet. As the pulse width is increased or decreased the tonal quality takes on a thinner more nasal sound.

Bit 7 — NOISE: Noise can be used to produce a wide range of effects from wind and surf to explosions and thunder. The pitch is controlled by registers 0 and 1 and a wide range of effects can be produced by filtering.

Register 5: ATTACK/DECAY

This register and register 6 are divided into two. Bit 4 to 7 are used to select an attack rate and bits 0 to 3 select a decay rate. Each can take a value form 0 to 15. Attack, decay, sustain and release govern how quickly a sound rises to its maximum volume and then how quickly it dies away. If it rises and falls too quickly you may only hear a click.

Register 6: SUSTAIN/RELEASE

Bits 4 to 7 select one of 16 sustain levels and bits 0 to 3 select one of 16 release rates. These are used in conjunction with register 5.

Registers 7 to 20: Voices 2 and 3

Much as the first seven registers control voice 1, registers 7 to 13 control voice 2 and 14 to 20 control voice 3.

The Filters and Volume Registers

Registers 21 and 22: FILTER CUTOFF LO BYTE/FILTER CUTOFF HI BYTE

Bits 3 to 7 in register 21 are not used. The remaining bits form an 11 bit number (FC0 and FC10) which controls the cutoff point or frequency of the filter. The cutoff setting is a reference point and it depends upon the type of filter selected what happens at this point.

Register 23: RESONANCE/FILTER

Bits 4 to 7 select one of 16 (0 to 15) resonance settings. Resonance emphasises the frequencies around the cutoff point to produce a brighter sound.

Bits 0 to 3 determine which voices pss through the filter. If bit 0 is set to 1, voice 1 passes through, etc. Bit 3 controls the external input so you can route an external sound source through the 64's filter. If you do attempt this, seek expert advice so you do not damage the chip.

Register 24: FILTER TYPE/VOLUME

Bits 0 to 3 contraol the output volume of the entire sound system. It can be set to one of 16 values from 0 (off) to 15 (maximum volume).

Bits 4 to 6 select the filter type. Bit 4 selects a Low Pass filter, bit 5 selects a Band Pass filter and bit 6 selects a High Pass filter. A low pass filter passes low frequencies, ie those below the cutoff setting. This retains the lower harmonics and results in a fairly rich sound. The band pass filter passes a band of frequencies either side of the cutoff point and attenuates (reduces) those further away. The high pass filter passes high frequencies. As it removes the lower, stronger frequencies, the result is generally a thinner sound.

If bits 4 and 6 are selected together, ie low pass and high pass, this results in a Band Reject or Notch filter which, as you can probably work out, passes frequencies **away** from the cutoff point and attenuates those around it. It's the reverse of the band pass filter.

The filter is one of the features which make the 64's sound facilities so superior to those found on most other personal computers. You can use it to create exactly the tone colour you want.

If bit 7 is set to 1 it will disconnect oscillator 3 from the output if it is not required when it is being used as a source of modulation for the other voices.

Registers 25 and 26: POT X AND POT Y

Although these are a part of SID they are not directly related to sound so we'll say no more about them here.

Register 27: OSC3 OUTPUT

This allows the computer to read the upper eight output bits of oscillotor 3 and produces numbers between 0 and 255. The numbers are directly related to the frequency and the type of waveform selected. With a triangle waveform the numbers will change from 0 up to 255 and down again. With a sawtooth they will increment up to 255 and suddenly to 0. With a pulse wave they will alternate between 0 and 255. Selection of the noise output will result in a series of random numbers which, as well as their potential for modulation purposes, could be used in place of the RND function. The rate at which the number vary is determined by the frequency.

Register 28: ENV3 OUTPUT

This is similar to register 27 only it reads the output of voice 3's envelope generator. The GATE bit must be set in register 18 to trigger the envelope. No waveform need be selected.

To see how these fit together, this short program shows what we need to do to make SID produce a sound.

```
100 REM PROGRAM 4.1
110 REM MAKING A SOUND
120 POKE 54296,15:REM VOL=15
130 POKE 54277,35:REM ATK=2:DEC=3
140 POKE 54278,249:REM SUS=15:REL=9
150 POKE 54273,16:REM FREQ HI BYTE
160 POKE 54272,195:REM FREQ LO BYTE
170 POKE 54276,17:REM GATE TRIANGLE ON
180 FOR D=1 TO 1000:NEXT:REM DURATION
190 POKE 54276,16:REM GATE TRIANGLE OFF
```

Next time we'll explore some of the effects SID can produce.

I.W.

Special Offer for Fans —

We've got a special offer for fans of Ian Waugh's music articles. We have got a few copies of his book "Commodore 64 Music" and a cassette. It is a comprehensive step by step guide to the powerful musical would ofthe SID chip.

The book thoroughly explains the workings of SID and the rudiments of music and includes programs to produce chorus, echo, microtonal scales and sound effects like waves, seagulls and foghorns.

Other programs play music from simple music noation, examples include The Flight of the Bumble Bee and Mozart's Rondo Alla Turca — in three part harmony. You can play your micro like a keyboard instrument, improvise over a bass line and turn a tune upside down!

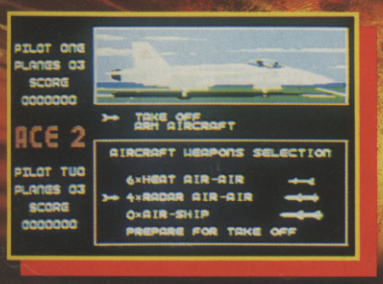
The final programs investigate ways in which the computer can compose music and how you can modify its output. Artificial Musical Intelligence!

All programs are in BASIC and fully documented and explained to help the beginner. To save typing, a turbo-load cassette contains all the programs in the book.

The cost to CCI readers is £7.95 for the book and cassette; £4.95 for the book only or £3.95 for the cassette only.

The supply is limited. Write to Ian Waugh Music Offer c/o CCI. Prices include p&p cheque or P.O. only. Cheques payable to 'Ian Waugh Music'.

ACE 2



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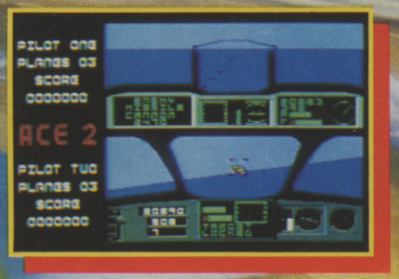

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ACE 2
THE ULTIMATE HEAD TO HEAD CONFLICT

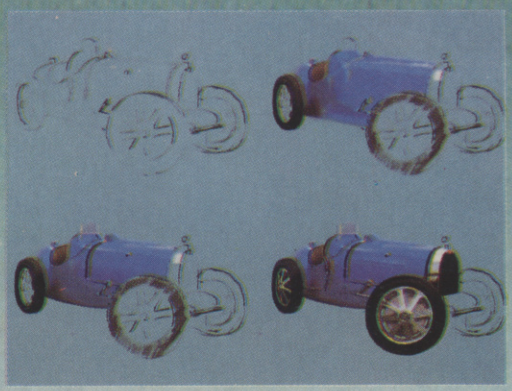
Screen shots are taken from the C64 version.

Feature

QUANTEL and its Dream Machines

GREENWICH

- Transparency conventionally scanned
- Pagoda placed in background: water, plant, highlights retouched: S C P J CH PA
- Paintings on left retouched; truck from second transparency positioned: S C P J CH A
- Pillow created and positioned: S C P J CH
- Plus three additional changes
- Total time: 59 minutes



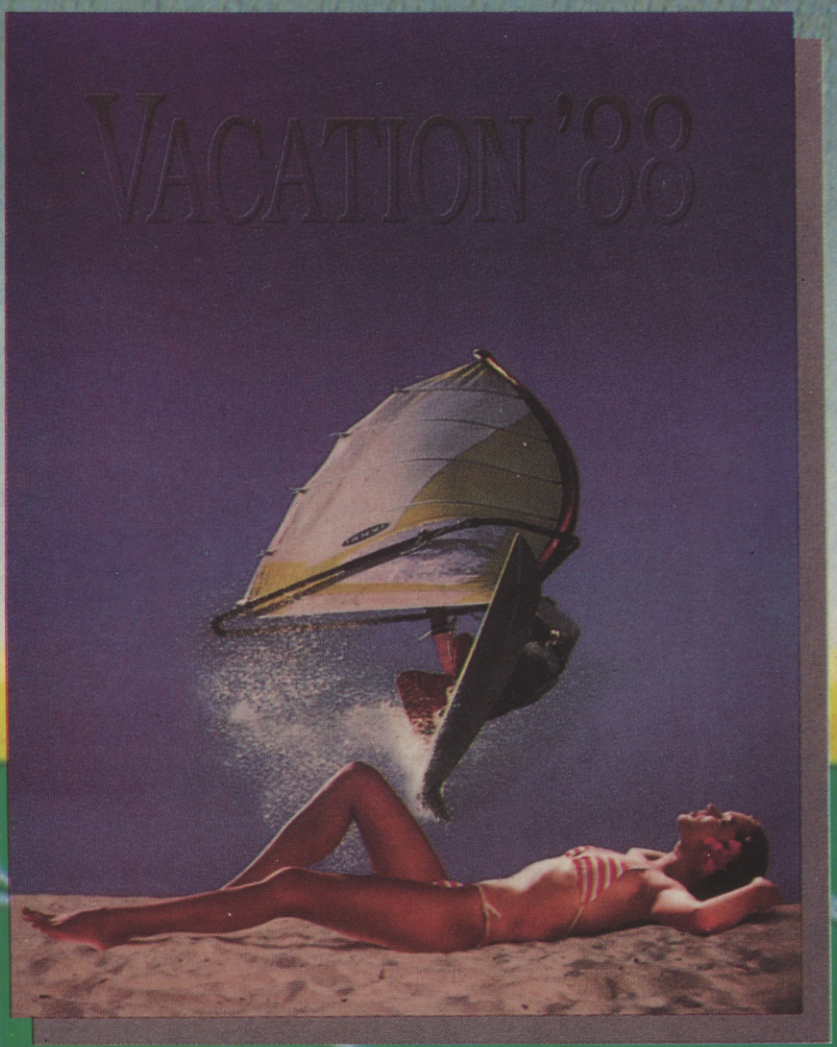
Symbols

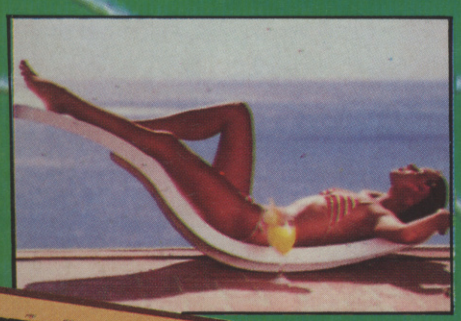
S - stencil
C - cut
P - paste
J - joystick
CH - chalk
PA - paint
A - airbrush
W - wash

Quantel is a company that could have existed at no other point in history. Quantel produces machines and software that create computer generated images which strike our sight like the dreams of visionary artists brought to life. In face, recently, Quantel gave its magic boxes to some world-renowned artists who used pixels instead of paint to create art. The results were shown on TV in the UK. Each artist expressed delight and astonishment at the wondrous world Quantel had opened.

The stunning effects we see every day on TV where images are turned, twisted, reversed and multiplied are around the world generated by Quantel magic. Amazing captioning — with words fizzing across the screen in shapes and variations unimaginable a few years ago... Libraries of digital pictures... Special equipment for the total control of electronic images... it all comes from Quantel. And not only moving pictures on video screens... now Quantel has produced a Paintbox that can give the graphic artist amazing control and flexibility for the creator of illustrations for printed materials. A Bugatti car can be drawn and then placed within a picture as a simulated three dimensional object...

While Quantel's electronic studios are far more costly than the home micro and, of course, far advanced in their technology, they show us the direction computer graphics are travelling. They are truly the State of the Art.





An example of the combination of scanned-in material with free illustration, producing a stunning finished image. Complex cut-outs are rapidly and simply achieved using Graphic Paintbox's automatic stencil facility. Total time taken 90 minutes.

VACATION '88

How to Get the Most Out of Your Computer

— The Power House

How to Get the Most Out of Your Computer is a two part package consisting of **Ultrakit** and **Vidcom 64.**

At first sight, Ultrakit looks to be an extended BASIC. On closer examination, however, you find that it's a program that runs alongside the '64 BASIC and offers nearly 30 commands to aid the BASIC programmer. These commands can't actually be used in a program but are a help in the writing of one. Among Ultrakit's commands are: "renumber" whch tidies up the line numbers, "au to" which numbers the lines automatically, "old" which restores the last NEWed program, and "delete" whch, as it says, deletes chunks of program. As well as these, there are commands to compare and search memory locations, change screen colours and printer control commands.

All Ultrakit commands must be entered in immediate mode (without a line number) and must be preceeded by an 'a' symbol. As these commands are not actually used in a program listing, and programs written with Ultrakit will run independently. As well as these commands, there is a character designer that allows the normal character set to be altered. This is a good idea, but awkward to use.

Ultrakit will be of use to regular BASIC programmers, but don't expect an extended BASIC, as Ultrakit is really a toolkit, and not a bad one at that.

Also in this package is the art program.

Vidcom 64

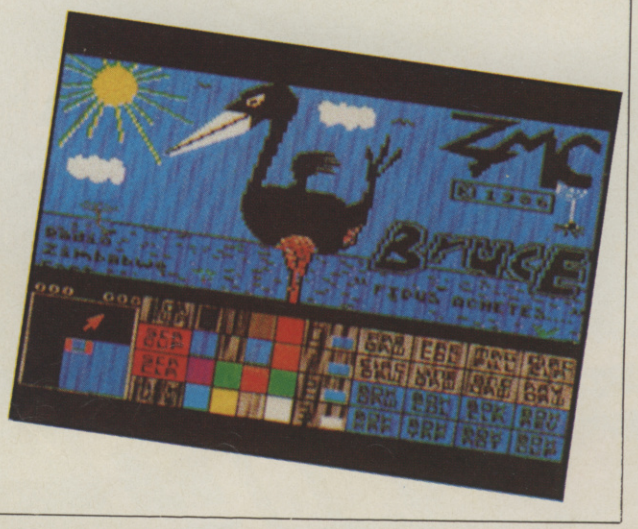
This was originally released on its own, but wasn't very widely available, and so now here is your second chance to get hold of it. Vidcom 64 has the option of either joystick or trak-ball control, and I found it to be compatible with the AMX mouse. As well as a 'free hand' drawing option, it has functions for drawing circles, lines and boxes. Pictures can either be in standard two colour mode, or four colour mode. Different colours and other options are selected from a control panel which covers about a third of the screen and flips to the top when the cursor moves to the bottom, allowing all the screen to be used.

A joystick isn't really suited to freehand drawing with its eight positions, and pictures drawn this way tend to be mainly made of horizontal, vertical and diagonal lines. Drawing with a mouse is pretty difficult, as you need to move the mouse a long way just to draw a very small part of the picture, but the mouse control can't really be criticised as this is just a bonus.

Vidcom 64 has all the features of a decent art program, but isa bit tricky to use. Unless you're a good artist by nature, don't expect to be able to produce anything spectacular without a lot of practice.

How to Get the Most Out of Your Computer is a package for those who are bored with playing games or just want to explore their computer, and very reasonably priced at £9.95.

T.H.



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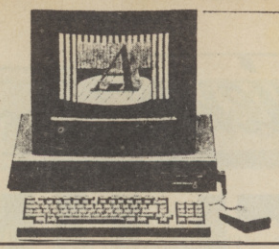

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THINKING CAP

For a couple of years I used a program called 'Brainstorm' copied out laboriously from an American magazine. This is a great help with the type of article where you begin with a swarm of disconnected ideas and no theme upon which they can settle. You simply type in the ideas as they come. When you have finished, the program makes you compare them and divide them into pairs or groups.

Written by Bob Bliss and Lee Powell, 'Thinking Cap' consists of one disk and a well-written, easy-to-follow manual. It runs on the C64 or 128 in 64 mode. The purchaser can order a back up copy from the US for $10.

The Command Menu offers: START; LOAD; SAVE; PRINT; MERGE.

If you choose LOAD you are presented with a window containing a directory. If you choose LOAD when the program-disk is still in the drive, you can inspect some specimen outlines (term paper; book report; speech; resume; business). This is worth doing first because they illustrate the principle upon which 'Thinking Cap' works. Then choose START.

'Thinking Cap' begins by asking you to enter (in a window which appears for that purpose) a title for your outline. All the features can be amended and altered later.

After entering the title, you press RETURN. The window vanishes to reveal a full screen headed 'table of contents', the title and, below that, the figure '1'. The figure is an invitation for you to type in your first idea. You do that, press RETURN, and then type in the next idea when '2' appears on the second line.

You continue, listing ideas. As you do so, you may have another idea connected with one you have already entered.

Imagine that you are writing about a book and your second idea was 'other books by author'. You reach the fourth item on your list and realise that when mentioning the author's other works, you should indicate whereabouts the book you are reviewing came in date order.

No problem! You cursor back and when 'other books by author' is highlighted, you press RETURN. This takes you to a new 'page' which bears your title and the words 'other books by author', with the figure one at the beginning of the next line. It is inviting you to list ideas as sub-sections of this section. For instance, you might set out all his books in chronological order, if there are not too many. If they are numerous, '1.' might be a general description of the books which preceded the one you are reviewing; '2.' could be the book under review and '3.' could be a comment about the books which came later.

Print Options

By applying the same procedure to this sub-section, you can start a new 'page', listing sub-divisions of any item listed in the sub-section. You can alter any line by highlighting it and pressing the '£' sign. This puts the line into a window for editing. By pressing RETURN, you can store it in its amended form.

At any time you can return to the 'table of contents' page by pressing F3. You would not normally want to return to the Command Menu unless you wished to quite, or to SAVE, or to PRINT, or to LOAD a different file. But you can get there at any time by pressing CTRL.

The PRINT options are generous and I had no difficulty in getting a print-out. The 'enhancement' option allows many variations in the way the outline is printed . . . titles and sub-titles can be emphasised or widened; paragraphs numbered in Roman or Arabic (numerical) style, or indented, or in technical style (e.g. '1.1.'). There are options, too, about page lay-out: line-spacing (single, double, treble); position of margins; printed lines per page; page numbers; paper length; single sheet feed.

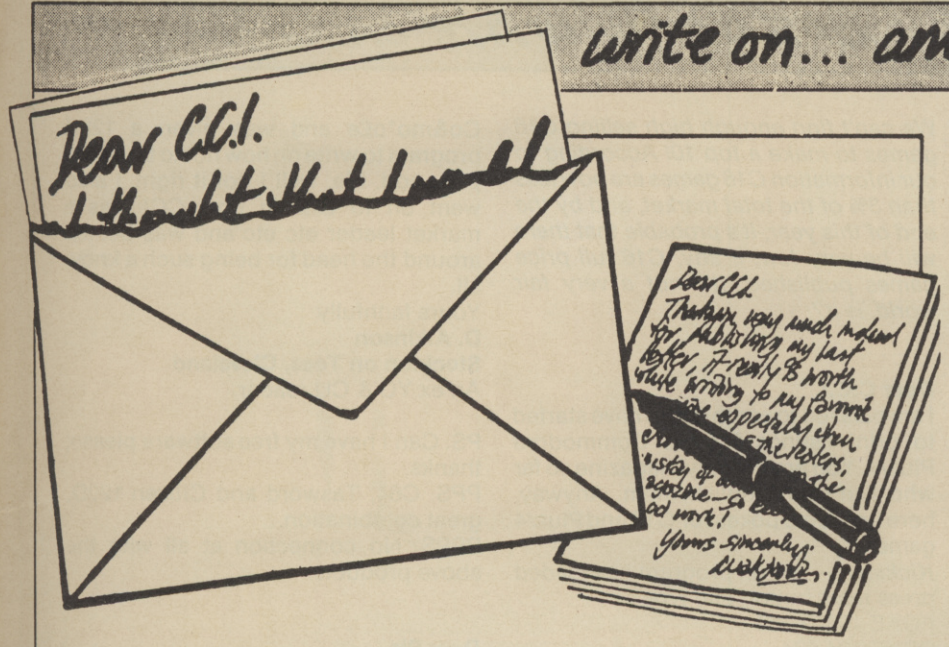
In other words, this program aims not merely to get your ideas into order but to present them for you neatly and in a style suited to the subject. At the end of the session you are not left simply with a rough list of headings printed in block capitals. You could use this print-out as the table of contents at the beginning of a book, or send it to a publisher to indicate what form your magnum opus takes.

It is worth the money? That depends on you. It will do its job thoroughly and flexibly and give you a presentable document at the end. It has been written with intelligent anticipation of a writer's needs. For instance, if you are writing something involved, the program allows you to deal with just one section; and there is a facility for merging the various sections later. If your working-disk also contains files from another source (e.g. your word-processor) the directory which appears when LOAD is selected lists only 'Thinking Cap' files. The design of the screens is pleasing, easy to read and windows are used whenever necessary but never as mere gimmickery.

The real question, then, is whether you need what it offers. If you are serious about your writing, 'Thinking Cap' must be good value at £39.95. Even someone with an instinctive flair for construction will still learn a lot by submitting occasionally to the discipline of 'Thinking Cap'. And if you have to write anything longer than an article (say a short booklet), where it would be asking too much of your intuition if you were to make no preliminary notes, the ability of 'Thinking Cap' to organise your work comes into its own. It is professional in its approach, and will appeal to writers who are professional in theirs.

Contact:
Precision Software Limited, 6 Park Terrace, Worcester Park, Surrey KT4 7JZ

write on... and on... write on...



We are getting an increasing number of letters from CCI readers. And the more the better. They are all good but we are going to give a CCI Tee Shirt to the one we think the best each month, just to encourage *you!* So if you would like a Tee Shirt put your size at the end of your letter.

We also get lots of letters which require individual answers. We do try to answer them but if you want to have *any* chance of a personal reply, please include a stamped addressed envelope — or from outside the U.K. an international reply coupon.

P.S. We sometimes have to cut long letters. Brevity, someone said, is the soul of wit (whatever that might mean!).

Dear C.C.I.

I should be obliged if you can tell me why games etc. on disk are approx. four pounds more expensive than the same games produced on cassette. Looking through your magazine I see from the adverts that blank disks are only a few coppers dearer than those of blank cassettes.

Yours sincerely.

Norman Gardner, Swanage, Dorset.

Dear Mr Gardner,

An interesting question. It is a little more expensive to provide disks and the mastering and protection may cost slightly more. But the main explanation is one that was given us when we once asked a leading games company, the same question. The answer: 'It's what the market will bear.' Commercial but at least frank.

You should also consider that historically the UK has a very small disk-buying market, unlike other countries. So economies of scale are not so easy to achieve. We hope that will change and so too the disk-based software prices.

Dear C.C.I.

This letter is to do with an advert in the June edition of the "Commodore". The advert is on page 122 and is called A.G.F. Direct Mail Discount.

My young son, in good faith sent a cheque to these people in April and the cheque was cashed by them on 24 April 1987. Despite many unanswered calls by telephone and the cost of a registered letter, I have had nothing from them at all.

I have been in touch with the local Citizens Advice Bureau and they inform me that the Trading Standards Department have a further 72 complaints about these people. I hope by now you have been advised of this situation and have stopped any further adverts from being allowed in your magazine until the situation has been rectified. This way at least other children will be protected.

Sincerely,

Mrs S. Bland, Eastbourne, Sussex

Dear Mrs Bland

We have certainly stopped taking advertisements from A.G.F. as have other magazines. We are hoping to co-operate with the Advertising Standards Authority in attempting to stamp out this apparently fraudulent activity.

Dear C.C.I.

A few friends have asked the obvious question, "What about the next century". The solution, if you should wish to pass it on to your readers, is simple enough to be included in your letters column.

Generally speaking a leap year occurs every fourth year except every 100 years, so the program allows for the fact that 190 was not a leap year. The year 2000AD is in fact a leap year so we can look forward as far as 2099 without complication, this should be quite far enough for most people wondering for example, on what day of the week their daughter's eighteenth birthday will fall.

It is necessary only to alter two lines.

```
230 PRINT "JANUARY 1900 TO
    DECEMBER 2099"
```

and

```
300 IF YY >=1900 AND YY <= 2099
    THEN YY=YY-1900:GOTO 320
```

To go any further than this, we must allow for the fact that years 2100, 2200, 2300 etc. are no leap years. Readers who wish to try this exercise will need to pay attention to lines 340 and 390 which tests for the year 1900. And also to line 370 which adds a day every fourth year, but must be stopped from doing so in (say) 2100AD.

John G. Wigmore
Scunthorpe, Sth Humberside

Dear C.C.I.

At the moment I am the proud owner of a C64 but would like to upgrade to one of the powerful new Amigas, but my problem is that I cannot understand why there is a difference in price between the A500 and the A1000 when they seem to have basically the same features? Also some companies advertise A1000 for a cheaper price than new Amigas what is the difference please? With my C64 I use a Star NL-10 printer will I be able to buy a new interface for the Amiga? And nearly my last question, will all A1000 software and hardware run on the A500? Also what is the advantage or disadvantage of an external drive which use 5¼in disks. And now my last question, your much needed magazine "Business and Amiga User", who does it cost £1.50 for over 60 pages when C.C.I. is such good value for money. I hope you can answer my questions and congratulations on an excellent magazine, keep up the good work.

Your sincerely

P. Bates, Kristiansand (S), Norway

Dear P. Bates

The difference in price between the new A500 and the 'old' A1000 is rapidly diminishing. The main distinction between the two would seem to be the A1000 was launched and intended as a more business-orientated machine. We haven't seen any company advertising the A1000 at a lower *price than the A500 but you do have to take into consideration the cost of a colour monitor. The advantage of a 5¼in disk drive is just that — it will run 5¼in disks. The Amiga's usual size is 3½in. Why does 'The Amiga User' cost more than CCI? The economics of publishing means that if you produce 60,000 copies of a magazine then it costs less per* copy *than if you publish 6,000 copie, Mass production... If Rolls Royce manufactured as many cars as Ford — they would charge Ford prices. However, the size of 'Commodore Business and Amiga User' is rising, its price isn't.*

and on... write on... and on... write on... and on...

Dear C.C.I.
I have been using and following Commodore for nearly two years, and reading C.C.I. for one and a half years and really enjoy the coverage given to all aspects of computing, but I have one moan at the moment and this is that there is a Sinclair program and a program in the Amstrad magazine for 'Knitting' but there is nothing from Commodore programmers or magazines? My wife enjoys knitting and would like to see a program for knitting as I'm sure the many wives of other male computer maniacs and the Female computer maniacs would like to have such a program, (there must be some out there in computer land?)

Is there any one that has an idea about such a program? perhaps the illustrious Jeff Minter can shed some light on the subject or even offer a program? I reckon Jeff could do one in his sleep with one hand (grovel, grovel).

I can even understand the fact that there is practically no programs for the C128 (of which I own one and proud of) it is the same with some utility programs there seems to be more for BBC computers and Amstrad etc than there is for Commodore? It is not as if the Commodore does not have the capabilities for such programs because it has, the blame lies with the programmers. They keep pumping out games and don't give us the chance to use and appreciate and enjoy some different utility programs.
Yours faithfully
Norman Stone, Chelmsford, Essex

It's obvious that programmers are not a load of knits (ouch!). Well, Jeff, and all you experts what about helping Norman (and Mrs Norman) out?

Dear C.C.I.
I am writing to say I think you magazine is brilliant, I have a Commodore 16 myself and I am rather disappointed that you advertise so little for the C16.

Please "please" could you rectify this. I have purchased your magazine since April 1987 but feel that I am wasting my money.

Sorry to have to write this but I think all C16 owners are being neglected.
Yours sincerely
Damian P.G, Sopp

Dear Damian
Interesting letter this. We're brilliant but a waste of money? How do you work that out? Anyway we *don't* advertise *anything let alone the C16. Advertisers sell what they think the public will buy and if they're not selling C16 stuff then there's not much CCI can do about it — except for what it has done already. And there are people who say we practically created the C16 games market.*

We can't find enough high selling C16 games to make a top 10! According to our information C16 games are now less than 3% of the total market, and by the end of this year, it's probable that there will be very few, if any, C16 full price games published. It's not a very fair world, is it?

Dear C.C.I.
I am pleased to see that you have started to print listings for the Commodore Plus/4. You are the only magazine so far who I've seen publish them. Anyway, here are some pokes for C16 and Plus/4 games.
Kickstart — When program has loaded press reset button and type
POKE 10403,234
POKE 104,234
and SYS 8191 to start the game again.
Invaders — When program has loaded press reset and type POKE 8517,234 and SYS 4100 to restart game.

Also penpal wanted who owns a Plus04 who will be able to swap hints, tips, software etc.
Yours faithfully
Karl Hawkins
10 Askew Court, Stocksbridge, Sheffield S30 5AF

Dear C.C.I.
Please can you give me/tell me where I could purchase a Simon's Basic. Before I had a Commodore 64 computer I had a Vic20 plus the required expansion units up to 16K. I could do Hi-Res graphics with the 3K expansion unit, but there is one snag I cannot do Hi-Res graphics on my Commodore 64 yet. I don't have a Simon's Basic which I need to do the Hi-Res graphics. The only firm was Dimension Computers Ltd, but then they only had one part of it NOT the complete unit.

So may I ask you again where can I get hold of the above mentioned item. If you can give me a list of people where I could get one at a reasonable price. The reason I is when I rang Dimension Computers about the Simon's Basic they said that they had only part of it.
Yours sincerely,
C. Hazell
23 Woodview Rise, Strood, Rochester, Kent ME2 3RP

Anyone help to solve Christopher's problem?

Dear C.C.I.
I went to a pub quiz last week and one of the questions asked was "What has great games reviews, great news pages, magic features, competitions, type in programs, is cheap and gives free software?" Someone answered Y*!r Co&mo*o£e and was given a 128K program to write on how not to be a prat, poor sod. Me, well I got it right. I also went on to explain how CCI was a market leader etc etc and was beaten around the head for being such a know all.
Yours faithfully
D. Atkinson
Stockton on Tees, Cleveland
An ex YC & CU reader.

PS. Can I have my free software please; thanks.
PPS. C64, Tasword and Citizen 120D, great combination.
PPPS. No connection at all with the above products.

Dear Sir
I'm fairly new to Commodore world, as I've just updated to an Amiga from a BBC.

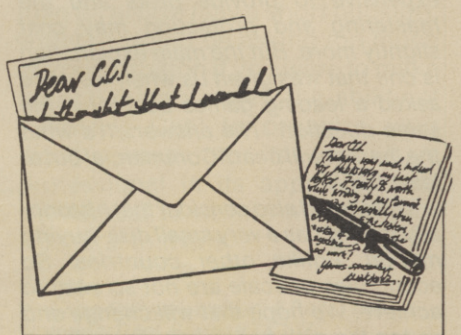
Basically, I'm just writing to let all the readers out there with modems know of some great bulletin boards with very popular Commodore User Groups. These systems run on HBBS+ and therefore anyone with VIEWDATA protocol can receive colour. If you do not have VIEWDATA, then don't worry, as HBBS+ can work out what protocol you are using, and adjust if necessary. Try any of the following:—

Belelgeuse five	— 0463 231339
Madhouse	— 061 4778405
Belle Vue	— 0274 498221
Alternative Reality	— 0959 76695
Silverthorn	— 0224 632570

Hope the readers have fun ringing these systems.
Yours faithfully
Oscar Brumwell

Dear C.C.I.
I don't think the letter you published in June C.C.I. from Mr Peter David Dudley is a genuine letter at all. Come on! You made it up, didn't you?
Yours faithfully
Jim Clavier, Barnet, Herts.

Believe it or not every *letter we publish is real. Even yours Jim!*



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ARCTICFOX

ELECTRONIC ARTS — Market Leader

Electronic Arts is a major force in the home computer field in the USA. Its products have until now been sold through other companies in Europe and the rest of the world.

It is now setting up its own company in London to spearhead an advance toward world markets. CCI interviewed some of its leading executives including Mark Lewis, Director of European Publishing, presently engaged in building up the European operation and took a close look at how Electronics Arts has become the market leader.

Electronic Who?

When CCI awarded its 1986 Oskar for the software company of the year, some people expressed bewilderment. Not US Gold? Or Ocean? Or Gremlin or Elite? Electronic who? Most of those bewildered people were obviously British — and subject to the usual insular UK idea that the world outside these shores really doesn't have that much importance. After all, it's foreign! Across the Atlantic — where sales of software make the UK and even the rest of the world look very small indeed, there would have been no surprise. For in the USA the name Electronic Arts is recognised as the leader in the home computer entertainment market and a force that is growing with every release it makes.

In 1986, Electronic Arts was the largest US consumer software firm with sales of over $27 million (£18 million). It pushed its sales up by 84% over the previous year which made it the fastest growing company in the industry from 1983 to 1986 with ten consecutive quarters in which it made profits. In the two quarters of 1987, it has continued to make profits. 3 years uninterrupted profitable progress — not at all bad for an industry that has gone through some pretty rough times over the same time span.

EA hasn't got to these results that would gladden the heart of any banker by selling rubbish — cheaply or at inflated prices. It has made inroads into the hearts and pockets of the buying public by a refreshing dedication to old-fashioned virtues like quality and integrity. The outcome has been some of the most outstanding products that the home computer world has seen — and the merited commercial success that goes with them. The Bard's Tale for example, was the best-selling medieval dungeon storyline — and there has been a raft of them on the market — in the last two years. Starflight — yet to reach Europe in any quantity — was selected by United Press International as the 1986 Game of the Year — and prior to that UPI had never even selected a game of the year.

Then there was the Deluxe series that did more than anything else to create EA's worldwide reputation and caused CCI to give it the greatest consideration for the Oskar. Deluxe Paint is probably the product that has done most so far to make the Amiga a success. It has become so familiar to Amiga users that they may have forgotten the stunning impact it had when they first saw it. It brought true "paintbox" creativity into the hands of non-experts, and at exceptionally low cost.

CCI was invited recently to see a professional studio's computer graphics services that, we were told, could put terrific pictures on our pages. Look, we were shown, wonderful, isn't it? And at only £150 an hour! We gently informed them we could do practically the same thing ourselves on the Amiga — using Deluxe Paint for nothing...

However, Dpaint was only one product in EA's series of 16 bit software. It was a family created — the first, EA claims — to share graphics and music files. Pictures from Dpaint can be used with its DeluxePrint program to make full colour greeting cards, calendars, signs etc or slotted into DeluxeVideo to make animations or home video special effects. And music composed on the Deluxe Music Construction Set can be fitted into DVideo as the musical score. This whole series has had a substantial impact on the 16 bit scene setting new standards and building new horizons for developers and users. Its success commercially can be judged by the fact that the Music Construction Set is the only music software to sell over 250,000 units. The Deluxe series played a major role in jumping Electronic Arts into the market leaders worldwide in 16 bit productivity software.

CONTINUED ON NEXT PAGE

'Artists'

Although it has shown brilliant creative ability, this factor has not been the only reason for EA's success. Electronic Arts combines a publishing company with a distribution network that, it claims, produces a synergy unique in consumer software. Its publishing strength guarantees its distribution company a flow of exclusive product to supply to retail customers; the distribution strength it has built up — in the US so far but now to happen in Europe guarantees that the publishing company, which means indirectly its artists and developers, get the broadest distribution at the best prices. It's not a new idea and has been used for many years in the music and film businesses but outside of EA, there are few companies who can achieve it in the software industry.

You should note the use of the word "artists". Not programmers but artists is how EA regards them. It tries to create an environment in which it can treat the valuable people who create programs as artists giving them creative and technical support and some of the best software tools available. "We are positioned around the artist." Mark Lewis says "Not the programmer..." he grabs a software package, opens it and shows that inside there is a picture of the "artist" who created the program and a short biography. "At this very moment, we're holding our Annual Artist Symposium in California... We fly in 80 to 100 artists for several days of discussions. They can talk about anything from what our packaging is like to why you are only paying 12%... We position the company as an artists' community."

That is a statement which would be rare indeed to hear coming from the lips of any other software company's executive. But it will be extremely encouraging to European developers. "We might have a similar get together here," Lewis adds "In some place like Leeds Castle." The thought of a European software company contemplating taking the aristocratic location for the meetings of heads of state and prime ministers and gathering together its "programmers" there is almost unnerving, if not impossible. Mention the word 'artist' to most software company MD's and they will reach for their revolvers.

For EA, this creative approach to software development undoubtedly works. But it does not stop at the human level. It carries on into the organisational and technical areas. EA borrowed from the music, film and book businesses to pioneer, in consumer software, the role of "producer". This position provides game designing, editing, creative and emotional support and links artists with the rest of the company. Mark Lewis started with the company as a producer and says he was given the freedom to produce anything he wanted providing it fitted in with company policy. He justifies the success of this policy by the fact that EA has attracted, in the US alone, 11 previously published artists away from other companies, including leading competitors. Each, says Lewis, has since done his best work, commercially and creatively.

On the technical front, EA seems to have led the industry in providing software tools to speed up and improve the process of developing software. It has a system it created itself called "Artist Work Station" (AWS). This, it claims, has improved productivity by as much as 50% and is one of the key features in attracting the best software developers to EA. It has also allowed EA to develop many of its products in the expensive and time consuming 16 bit field at a lower cost and lesser risk than its competitors. It claims that it entire Amiga investment was paid off in the first two weeks of selling Amiga products.

3 Million

Some research shows, especially in the US market, that the Electronic Arts name is the most widely-respected brand in consumer software. A leading retailer in the US has estimated that a new EA title would typically outsell a similar product from a competitor by about 15 to 20%. This may be partly due to the fact that EA has almost certainly won more awards — over 100 — in the last four years than any other publisher. In that time, it has sold over 3 million units of software. It is not surprising therefore that its "album" style pack in the States has been copied by over a dozen of its competitors.

Not content with past success, EA recently re-organised into three sections: Entertainment, Interactive Stories and Creativity. Each division contains its own producer groups, technical support, marketing and documentation and shares a centralised marketing, R&D and product engineering support structure.

Mark Lewis points out that it is EA's intention to repeat the same organised business development plan in Europe that it has acheived in the US. "We will be a publishing and distribution company here too. We will have a direct sales force... We are looking for £6 to £7 million in the same number of months." He believes it can be done through the same high requirements. "We're asking for a serious commitment... We don't want a clever sub-routine that will sell three thousand copies... we want games for real entertainment..."

For an ex-producer, he lays a great deal of emphasis on distribution. That is because EA believes that no company can achieve lasting success in the short life-cycle business of consumer software without really strong distribution. But most companies cannot build their own sales forces to approach the shops direct because the personality of a hit software developer cannot bridge the gap to the disciplined, organisation needed to get the software on the shop counters. But it is important because the distribution leaders get more attention from the big key retail customers like WH Smith or Boots in the UK. The leaders will get first shot at special promotions. They'll get more power to ask for valuable shelf space in shops for titles that have yet to become top sellers. It's even cheaper for them to send in the selling troops because each call a salesman makes to a computer shop can deal with more than one product. It can give better information direct to the company an lead to spotting market trends more quickly.

For example EA was the first to notice in the US an opportunity to sell mdprice (around $15 — £10) previous full price ($30 — £20) top sellers. So it announced it would sell 14 of its proven hits at $10-15. Two month later four of its leading competitors also announced they were getting into this price level but by that time EA has already sold $4 million worth.

A major reason why EA is able to keep the flow of products coming is that it does not only sell its own but also the products of "Affiliated Labels". These are generally smaller, quality orientated companies that lack the market clout to distribute their own consumer software successfully. One of them found that his sales more than doubled when he became an affiliated label. But EA recently took over completely a troubled software company. Batteries included, and incorporated it into EA. Mark Lewis says this was because its products fitted well with EA. However informed sources told CCI that it was to save Batteries Included from folding completely and so losing EA access to its products.

EA also, Mark Lewis emphasises, looks for individual products of excellence that it can take from one market to another. He cites Virgin's Dan Dare and Software Projects' Dragon's Lair as successful UK titles that they have taken to the US market. But he says "We are not a white knight" (a business expression meaning one company that saves another from corporate predators) "but a knight from a different country)..."

Witin a few months EA will have 10,000 sq feet of warehouse and around 6,000 sq feet of office space to accommodate a team of 40 or so people to create a full-scale operation near London to begin its push in Europe. It will also set up operations in France and Germany. "It will be a good start... but only a start..."

CONTINUED ON PAGE 30

BILLION DOLLAR TEMPEST

The market for specially-shielded computer and communications equipment, qualified under the US Department of Defence TEMPEST programme, will push past the $1.5 billion level this year, according to a new research report from International Resource Development Inc. The report predicts rapid growth for the next several years, with the worldwide market in excess of $10 billion (£6 billion) by 1993. Particularly strong growth is being experienced in the desktop and portable personal computer segments, and IRD is projecting continued expansion of these markets with broader use of TEMPEST equiment in the commercial segment. Currently, indicates the IRD report, the vast majority of TEMPEST equipment use is within government departments and the offices of key defence contractors.

Equipment is shielded to deter electronic eavesdropping. Unshielded terminals or computers emit radio waves which can be deteced and decoded relatively easily, up to a mile away from the equipment. Such eavesdropping is normally undetected and represents a significant threat to the security of any classified or sensitive information. Originally, shielding was performed on entire computer rooms; however, the proliferation of personal computers and terminals has made it more practicable to shield the equipment individually, states the IRD report.

IRD estimates that total TEMPEST sales revenue was $1.3 billion in 1986, up 32% over 1985 sales revenue.

In ten years, assuming that advances in shielding technology reduce the cost differential enough, the TEMPEST market will include nearly all government and most civilian computer uses subject to privacy laws (such as credit reporting) or Securities and Stock Exchange (anything that could be considered about maintaining trade secrets and other proprietary data will also fall into this market).The TEMPEST market could amount of $19 billion in 1997, for an average growth rate of 27% per year over the next decade.

Technology

TEMPEST shielding is advancing rapidly, according to the IRD report. While early shielded systems cost several times as much as unshielded equipment, the mass production of standard items, coupled with improved materials and engineering, has steadily helped to reduce the price of shielded equipment. Nevertheless, "TEMPESTizing" a personal computer can still more than double the price.

Optical fibre's immunity to leakage makes it the medium of choice for local communications in TEMPEST systems. This inherent property will be a significant boost to the commercialisation of fibre optic and Area Networks in general. In principle, an all-optical computer would be ideal for TEMPEST security, but it is still more than ten years off.

One important, recent development is the coating of glass with a thin metal film that lets light pass through it but not radio waves. This development will improve shielding and may allow shielded rooms to be built with windows, the IRD report suggests.

For details on the $2,100.00 report (∞738): Tempest Secure Computing Technology & Markets International Resource Development Inc., 6 Prowitt Street, Norwalk, CT 06855 USA; Telephone 203-866-78800.

TSB Speedlink

Recently the TSB launched a new product which brings to the customer flexible banking in a form that has never been available in the past. The new product is called Speedlink and involves using the telephone to access TSBs Unisys mainframe computers at Wythenshawe and Milton Keynes. Responses from the mainframe computers is via the spoken word and all input from the customer uses the tone sounds generated from modern telephones. For customers who do not have this type of phone TSB will supply a Tone Pad that fits over the mouthpiece of the telephone. The Tone Pad is about the size of a pocket calculator and cost £12.

Using the telephone or tone pad, communication with the TSB computers is possible from anywhere in the world that has a telephone connected to the international network, even payphones and carphones.

Speedlink uses Autophon Talkback equipment for the communication interface between the customer and the computers and it is this equipment that holds the digitally recorded sound for the spoken responses. It also converts the tone sounds into the mainframe transactions.

There are three facilities offered by the services, after gaining access by use of a PIC (Personal Identification Code). The first, a Balance Enquiry results in the account balance being spoken by an attractively voiced woman. The second, Funds Transfer allows customers to transfer funds from their Deposit account to their Current account or vice-versa thus allowing them to take greater account of their money. The final facility, Bill Payment allows customers to pay their Bills to major Retail, Service or Credit Card companies. In these last two facilities authorisation must be obtained from the customers TSB Branch before the Speedlink will accept the transactions.

Transactions are free while the account stays in credit or above a 400 average credit balance otherwise they are charged in line with normal transactions. The service is available to all TSB Personal customers with a Cheque account and Speebank card, the TSB autoteller card, for a quarterly fee of £2.50.

Further possible extensions of the system include quotations for loans or mortgages and Foreign currency orders.

L.K.

ELECTRONIC ARTS — Market Leader

Real Life in a Box

Electronics Arts takes a long term view of the consumer software market. It sees it playing a vital role in a society in which technological change will make our lives less restricted and more creative.

"An old Chinese proverb says: "I hear and I forget; I see and I remember; I do and I understand." Human life is all about being and doing. And the computer will become the greatest technology lever for being and doing, because of its unique interactive quality. Scientists have recently proven that the best way to increase human intelligence is through interaction. Superb audiovisuals will attract and entertain computer owners, but the best interactive software will motivate creativity and learning through a process of playing and doing.

Improvements in computer graphics, animation, and digital sound are steadily making computers look and sound more like TV. But unlike television and other media, computers are interactive. Instead of passively watching "the tube," a computer owner can virtually do anything that has ever intrigued him or her. With the right software, any experience, fantasy, or challenge in the human spectrum can be enjoyed conveniently at home. You can be part of the action anywhere in the universe and anywhere in time.

Electronics Arts believes home computers may become the most powerful medium of all, since the unique dimension of interaction is added to audio and video.

The company believes that an even greater market for this new medium is inevitable as audio-visual features improve, hardware costs decline and universal standards are established.

Electronic media put "real life in a box." Television gave the 1987 Super Bowl 122 million seats. Film has helped give Mozart and Salieri greater contemporary significance. And the Beatles can now play private concerts on your hi-fi or CD audio system.

In 1964, Marshall McLuhan predicted that TV would make the classroom obsolete, and that games had powerful learning potential. His prophecy, Electronic Arts believes, is proving true. It hopes that, in the next decade, new computers and new software can reduce our passive dependence on television and get humans actively involved in experiences that instruct as well as entertain."

Company Values

It is interesting to look at the professionalism of the team that runs Electronic Arts. They must seem as powerful as IBM does to its competitors. The founder and President and Chairman of the EA is Trip Hawkins. Now 33, he was at Apple through its years of hgh growth. His degree from Harvard is in the highly relevant but somewhat unusual subject of strategy and applied game theory, and he got a master's degree in business administration.

Tim Mott the V.P. of US Publishing got a BSc in computer science from Manchester University in England. Stewart Bonn, V.P. of Creativity Division worked for IBM for 7 years and has a degree in computer science from the famed campus at Berkeley. Bing Gordon, a co-founder of EA was a top advertising executive and has a master's degree in business from Stanford Graduate of Business. Eric Walter V.P. of operations graduated from the RAF College at Cranwell in England and has an MBA from Wharton Business School. Joseph Ybarra V.P. of the Interactive Stories division has worked for Apple, DEC and Data General . . . and so it goes on . . .

EA is above all an organisation for the production, under the very best conditions, of top quality consumer software. But it does not just organise itself physically, it attempts to structure itself mentally — almost morally, it could be claimed.

Mark Lewis states unequivocally that it is a company that will succeed by treating people as important. "You don't get 160 people working 60 to 80 hours a week because they think it is a good idea... We don't see software as a passing phase... You have to be accountable... Trip has the vision... He drives them... He's approachable... he's got the same size office... None of us has more than 6 people reporting to us... That's a really important concept to make sure you can keep track of responsibility... The artists are not creating a program, they're creating a work of art... Every year the whole company gets together... Everyone in the company, US and UK are shareholders and each quarter we have a profit-sharing scheme that everyone shares in... It can be as much as another paycheck..."

These ideas are embodied in an "official" list of values. They are the ethic the company lives and works by... Vision... quality... achievement... teamwork and integrity. They have been set as the standards by which everyone must conduct themselves. And if you want a job with Electronic Arts, you will be judged suitable or not on your ability to act strictly according to them.

World Market Leader?

It is perhaps significant that EA's move into Europe coincides with Commodore's commitment to give a free copy of Deluxe Paint 1 with every Amiga 500. It means that with the 16 bit machine the time of higher quality, higher price software has arrived. This is the field in which an organisation with the scope and power of Electronic Arts can reach for the role of world leader — and make it highly profitable. Its ambitions have always been greater than an 8 bit machine would allow. It has already stopped producing for the Atari. It sees its 16 bit involvement only as a beginning. It views the computer software market as moving into the even more exciting field of CDI — compact disk interactive. It last year achieved half of its sales in the 16 bit market. It believes that CDI will bring the industry unprecedented growth and climb into a level of audio visual creative entertainment that we can hardly imagine today. It already intends as those higher, more creative standards take over our home computers to be the setter of the pace out in front as world leader. Electronic Arts record to date gives little doubt that with its creative, distributional, organisational and financial strength it will be in the favourite position to achieve that grand ambition. It is extremely unlikely that from now well up into the 1990's anybody will ever again ask "Electronic Who?"

'It's fun being a Pioneer'

Trip Hawkins, Electronic Arts founder and President, has spent over 25% of his time in Eurpe in the last year helping create as close a copy of his successful US organisation as is possible in the very different European scene. He told CCI that one major development was the signing of small but important independent UK softare companies as affiliated labels. The first two are Nexus and the well established CRL of Frankenstein and Dracula ame. "CRL's Clement Chambers is a good friend," says Hawkins. "They're both nice people".

This emphasis on personal and not simply professional relationships is typical of the Hawkins approach. His Electronics Arts staff speak warmly of him and business associates evince an impressive respect for his straight dealing. He has built an enviable reputation as a man of trust — which can only help EA's move into the markets outside its home US ground.

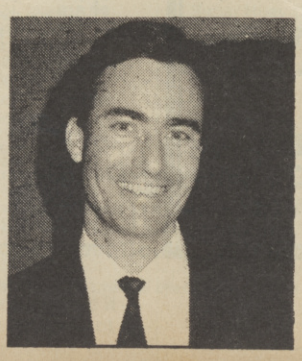
Hawkins' involvement with the computer world goes back a long way. Now 33, he has an unusual degree from Harvard in *Strategy and Applied Game Theory*. It was unique when he asked to study it. There was no established course and he had not only to convince the college authorities to let him study for it but to go out and persuade faculty members to teach him. It took him a year and a half to get it —and then he had to do twice as much work as in a traditional course. He discovered that it was possible to study any learning experience and duplicate it in a computer — Sport . . . Maths . . . Science. Then he wrote a thesis on nuclear arms control. He studied old military crises — since World War II "and all the things that could go wrong in a nuclear situation . . . injected a false alarm with a malfunction of a Russian missile . . . built-in a coup . . . threw in a meteor shower . . . and a whole bunch of little things: and God help us!" He even got "a grand" from the John Kennedy Peace Institute to help with the costs.

One of the key words in the Electronic Arts vocabulary is "interaction". It stems from Hawkins own interests. 'I was already a believer in games as the best way of learning when I tried a computer. I thought this is the world's best way of learning by interaction . . . It's been proved that intelligence be improved by interaction!"

"It's fun being a pioneer"

The first computer Hawkins saw was a time-sharing terminal and when he was 19 programmed his first computer game. He also at the same time started his first company to sell a football board game. "I lost every penny I had — but it was great fun to be an entrepreneur!" Computers impressed him enough for him to go straight from college to Silicon Valley in California as a consultant. He joined Apple when it was still small and had sold only a few thousand computers. He became Business Marketing Manager and by the time he left Apple had sold millions. He was involved in the development of the Lisa and Mac computers and things that are incorporated today in the Amiga, even in Geos with the 64, were initiated with much opposition then. "Icons, pull down windows, the mouse . . . you can't imagine how much time was spent arguing whether there should be one button or two . . . Plenty of people fought the mouse tooth and nail . . . We bought a mouse from a guy who made them by hand for $400 and smuggled it in . . . all the other engineers were opposed . . ." He grins, "It's fun being a pioneer!"

The experience of introducing leading edge technology has clearly influenced his philosophy for EA, as does the idea of stimulating people toward the future. "The 16 bit computer will succeed. People are going to realise they can do things they couldn't do before . . . Our biggest challenge will probably be in Europe . . . We have already plenty of true believers in the US . . . their average age is 27 . . ." Hawkins believes that the type of product that EA will be producing wil go even higher in quality appealing to an audience that perhaps has never used a computer before. It wil not be easy for EA creating something new, it never is, pushing the whole computer world towards an unknown future. He quotes Einstein, "Great spirits frequently evoke violent opposition from mediochre minds." The way he sees it moving is to produce software that is outstanding in quality. He cites a new EA product, Earl Weaver Baseball, "one of the finest pieces of software we've ever made."



Reality

For him, for Electronic Arts and perhaps for the whole computer world he believes the biggest question is "Can you get the software to feel so real they'll forget they're using a computer?" "At the moment," he points out, "we're still at the stage that cars were in 1910 . . .'

There is a futuristic look about Hawkins. No, he is not dressed in a space suit or anything other than conventional Brooks Brothers Ivy League style business suits. But he is creating a company in his own image in that search for "software to feel so real". He is looking for something that is not there yet and he is enjoying the challenge of creating it. Not many people in business world dare to say "It's fun being a pioneer!" Most would take the more cautious view that pioneers get their heads shot off. But Hawkins' vision of going hard and fast for the future has certainly paid off for Electronic Arts in the US. Will the Europeans prove reluctant to be dragged into the 21st century? Will they cling to the less exciting but more familiar today? It there something that is peculiarly American in EA's optimism and self-belief that will not transplant to European soil? But we are talking to an empty space. The quick-moving Trip Hawkins has flahed off to another meeting.

Maybe to sign up another UK company — we hear Martech could be the next. Maybe to get 16 or 20 craftsmen on the road and change the UK software distribution picture overnight. Maybe to inspire or create that "Reality in a box" that Hawkins wants us all to share. It's fun being a pioneer . . .

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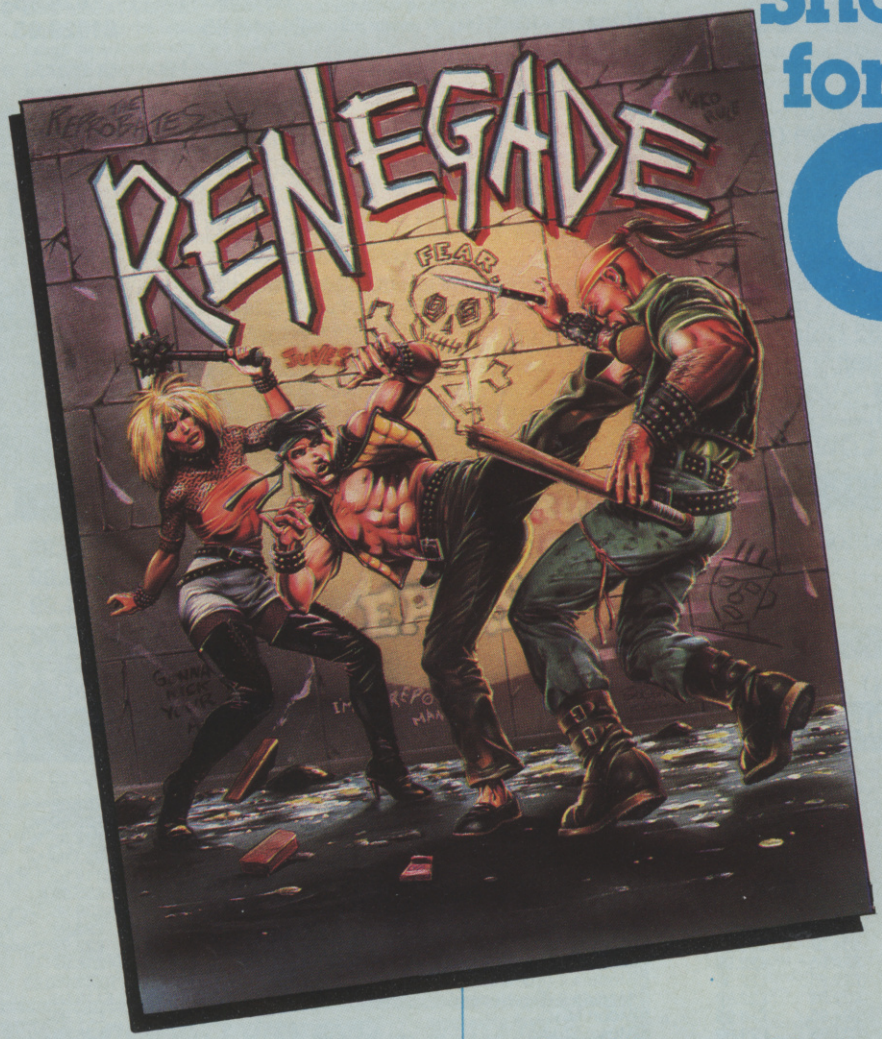
Feature

OCEAN

Shooting back for Number ONE



On Manchester station there was a poster that said 'you might as well go out in style'. There is no suggestion that Ocean placed the poster there but it applies exceptionally well to a games company that thinks of itself and publicly claims to be the industry leader. Everything about Ocean has a certain style but what really counts, when the chips are down and the chart numbers come up, is the quality of the games a company releases. Ocean executives will admit that there was a time, at the back end of 1986, when a number of its games did not reach the standard both that it and the public wanted. Now, however, Ocean plans a series of games that it intends as "blockbusters" — strong potential number ones with playability to spare.

CCI visited the Manchester Ocean H.Q. and was given a privileged view of some of the company's releases for the rest of 1987. They are mostly games with known names that have already reached the top in the coin-op circuit. 'Three of the top five coin-ops as of now' we were told. And they are all already far advanced in development and should be reaching the shops soon.

In House

Ocean, conscious of the need to repair the damage that the indifferent period caused, has set out to blow away those cobwebs and come up with a bright new shining presence. This new Ocean image has already been burnished by Wizball — a rave reviewed game, that is deservedly set to be one of the really big successes of 1987.

Interestingly, Wizball which everybody acknowledges ought to reach number one in the charts is not typical of Ocean's set up today. It was created by Sensible Software, the hotshot team the produced Parallax. Sensible Software are 'out house' i.e. work on contract and Ocean have signed them up for another 12 months and more potential smash hit games. But Ocean's policy now is to create virtually everything 'in-house' and it has around 30 programmers beavering away in a complex of rooms beneath its administration H.Q. It is for those magic works 'quality control' that they are there. Not factory style quality control but to make sure the blockbusting games are really Ocean crowd — big, big crowd-pleasing

standard — which is what Ocean is aiming for now with *every* game.

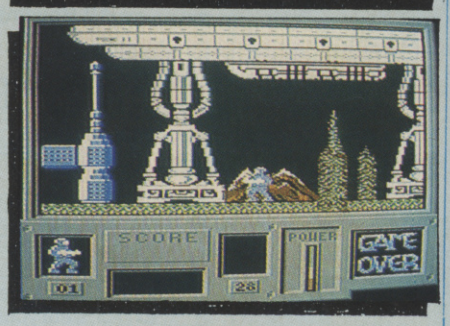
"We can see what we are doing." A senior Ocean executive told us. The man who sees most of what is happening to the games all the way along is Gary Bracey. He is Software Manager and sits where the buck stops for the way a game looks and more importantly, plays. He not only manages the software but is also the best games player we have ever seen. He demonstrated not just the games that Ocean is putting onto your computers with the most tremendous enthusiasm and skill but on a whole gallery of coin-op machines that Ocean keeps to dissect on video and real life play the coin-op games it converts.

Gary good-humouredly rides herd over a talented bunch of programmers. But that doesn't imply that they are cowboys, far from it, they are some of the top programmers working on Commodore and all the other home micros that money can buy.

The real cowboys are what Ocean desperately wants to avoid. Everyone knows that loads of bright as laser beam freelance programmers can come up with terrific sounding ideas. They pitch them and a good story to games companies — and everyone wants to say they are writing a game for the industry leader like Ocean, don't they — who *sometimes* put up an advance to start them off. Time and time and hours of phone calls pass. Yes, the game is nearly finished . . . Yes, it's coming along fine . . . It's nearly, nearly ready . . . Send us a copy, says the company. A disk duly arrives. *Unfortunately,* it has become corrupted in the post. Gee, that's terrible! Tell you what, say the freelancers, we'll send you another. A week or more later another disk actually arrives. What do you know? It's corrupted again! The Post Office, it's terrible just terrible isn't it? More phone calls, more delay . . . Finally — trumpets sounding, arrives a game that everyone down to the temporary cleaner would recognise as clumsy, carelessly programmed, full of bugs and practically unsaleable.

Time and money have been lost and if the company is tired or foolish enough to release it, its own reputation goes down the pan with the game. So it generally gets filed in the trash bin and put down to experience. The freelancers? Well, they're probably working on another game for another company . . .

There have clearly been a few titles where in the recent past Ocean has suffered some painful similar experiences and it is to avoid fiascos like these that it has now reduced its dependence on outside programmers to an absolute minimum. Only four groups were mentioned to CCI: Sensible Software, Denton Designs — a group with an outstanding reputation; Choice, another with a top hit record and Dinamic, a Spanish company who are establishing a name as one of Europe's best programming groups. Dinamic have already produced Ocean's recent chart hit Army Moves and have created what Ocean sees as a smash Autumn/Christmas seller "Game Over".



Three Number Ones

There is no doubt from what CCI saw, the potential of the next few Ocean releases is enormous. Paul Patterson, Ocean's recently acquired Sales Manager, predicts that Ocean will have at least three consecutive chart number ones. You might say "Well, he would, wouldn't he?" But enthusiastic — and biased — though he is, he may not be far wrong. CCI saw, in addition to "Game Over", "Athena" — a very clever and lively coin-op conversion with its sequel "Psycho-Soldier" already bought by Ocean as a follow-up; Renegade — fr m the Taito coin-op that has some of the most extraordinary fight scenes ever on a home micro — you can fight not one but half a dozen street thugs at the same time; and a game that CCI was convinced will be virtually unstoppable in its rise up the charts — if the coin-op original and Ocean's already created early screens are anything to go by — Rygar.

These are all names Ocean believes that will be on every games players lips — and occupying the top spots — as their planned release happens, each about a month apart.

While others look very good so far, Renegade must one of the largest and most violent games around "and so should be hugely successful" as Patterson says. It even contains kinky girls with whips to be defeated.

Rygar, CCI's favourite has the ingredients of a classic and could easily reach the coveted Christmas number one slot with a Gauntlet-sized success. It features multiple levels with a wild Rygar, spacesuited and athletic, running realistically and shooting up an amazing variety of dangerous enemies. Gary Bracey had practically to be torn away from the joystick. It may have the same effect on you!

These three games are far from the totality of Ocean's recovered strength. They have, at reputedly enormous cost bought the computer rights for the multiple Oscar-winning movie "Platoon" which they hav committed to convert "with discretion" and even include "moral decisions" — whatever that may mean . . . They promise there will be no

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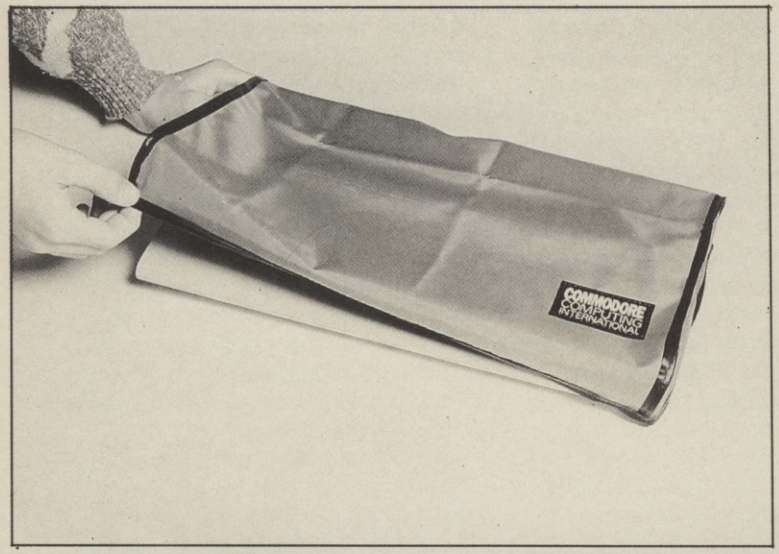

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OCEAN

CONTINUED...

blowing away of groups of Vietnamese or torching of villages as there was in the original film. They have also another game that even the experienced Ocean executives speak of in hushed tones. It is being created by Denton Designs and has the working title of "Tibet".

"It will make the Great Escape" — one of Ocean's recent hits," look like a single brick in comparison to a wall . . ." The Ocean team looks awed as they remember their first viewing of "Tibet".

And then there is "Rastan Saga" another coin-op slated for 1987 release that some independent observers think may prove to be the most popular game Ocean puts out. And, of course, "Game Over". Game over? Yes, the words that appear on everyone's screens too often is the name of a new Ocean game planned for release shortly. You've probably already seen the advertisements. The artwork is moving Ocean away from the cartoonish designs to a more lifelike style — you even catch a glimpse of a nipple in this one! This may be due to Ocean's realisation that the audience for full-price games is getting to be elder brothers, the second generation games players. There are, amidst this wealth of hit material no signs that Ocean intends to go down market to compete at budget level where the younger games player today goes to get his games.

"We couldn't afford it." They say. "We're going for the quality aspect even if it takes a little longer — it's worth it." Quality equals Time and Time equals money. But Money equals what Gary Bracey says they are going for — Playability. That magic word encompasses every aspect of a game's make up. In Ocean's view it even includes music. They have, in house again, one of the world's outstanding games computer music composers, Martin Galway. Nephew of the internationally famous flautist, James Galway, Martin keeps up the family tradition but in a different medium. The brilliance of his music for Ocean's games is a big plus for anything they release. He has now done about 40 since Daley Thompson's Decathlon started him off.

Ocean Style

CCI was given an exclusive listening of the sound track of Game Over. It was almost of pop single quality in freshness. It is without doubt one of the best of the year and joins Ben Daglish's Auf Wiedersehen Monty and Martin's own Wizball as soundtracks that are worth buying on their own.

Martin took only three days to write the first game music he composed. Now it takes him around six weeks. This extra time isn't because he has grown slower but because of the demand for quality and innovation of product that Ocean is now making. This intensity on pushing up standards — "Ocean Style" — is now noticeable in all aspects of the company. On Athena, for example, we noted that the leading character — yes, of course you knew that Athena came from Greek mythology, didn't you? — was white. "It had to be." We were told. "There are so many other sprites used."

The artwork of Ocean's publicity material has now developed a professionalism and polish that certainly greatly improves it. The Ocean offices, while they naturally show plenty of Ocean posters, are, unusually for a UK software company, pleasantly decorated with luxuriant hanging baskets of fuschias and have tall, lush cheese plants propping up the walls . . . And the girls tapping away at their PCs are not only expensively tanned and stunningly attractive but get the CCI summertime Oskar for the most stylishly dressed feminine staff of any UK computer company. Ocean style indeed . .

Ocean's total determination to get back to those number one spots that have recently eluded them is obvious. Whether they can depends on the playability they can pack into their games. It also depends partly on their ability to get the coin-op licenses they see as the road to big sales. "They" — David Ward and Jon Woods, Ocean's executive directors, "Come back from the USA or wherever and lay them out in front of us . . . one, two three . . . The best that money can buy . . ."

Ocean also depends on a high-powered team of executives who look suitably hungry for renewed success. "Next year" Colin Stokes, their Operations Director promised "We'll come and pick up CCI Oskars in a wheelbarrow!"

GAME OVER'S CREATORS — THE DINAMIC TEAM!

Game Over . . . Athena . . . Renegade . . . Rygar . . . Platoon . . . Rastan Saga . . . Tibet . . . and more. An impressive line up indeed.

But Ocean's success depends most of all on you — the games buying public and what you think of their games and playability. We think it highly probable from what we saw that you will take the same view as everyone who has seen these games that they are potential winners and that they will put Ocean back where it thinks it belongs — back up there at the top of the charts, where it wants to be — at number one — the leader of the industry.

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This month your letters are answered by Rae West. Rae is the author of three large reference books on Commodore computers; the latest is Programming the Commodore 64, following Programming the VIC and Programming the PET/CBM. All are published in the UK by Level Ltd. Rae is also published in the USA by Compute! Books.

Dear Rae....

HUNDRED-YEAR CALENDAR

Dear Rae,

'There is a problem with this program —January 1973. I tried my birthday, January 19th, and the computer said I was born on a Thursday. My mum says I was born on a Friday, and she is right. Please explain the fault!'

Richard Ramsden.

And:

'I was interested to read the opening comment: "this is for the 64 but is easily modified to work on most Commodore machines". I am a Plus 4 user and haven't a clue how to modify it. Could you please assist?

George Barker, New Milton, Hants.

Yes — days of the weeks are calculated by an algorithm called Zeller's congruence. The usual mistake made in programs of this sort is in not allowing for possible rounding errors. The version below, using month M 1 to 12, day D 1 to 31, and year Y typically 87, comes from my book and is always correct (I think!):

```
100 M=M-2: if M<1 THEN M=M+12:
    Y=Y-1
110 J=INT(2.6*M — .19) +D + Y +
    INT(Y/4) + INT(C/4) — 2*C
120 J = J-INT(J/7)*7 :REM J=0 SUN,
    J=1 MON, ETC.
```

Simple Commodore BASIC programs (i.e. witout POKEs and machine-language commands specific to a machine) should run unchanged on a Plus 4, since Commodore BASICs are all rather similar (unlike, say, BBC BASIC). If you're not sure about 64 BASIC, just try typing in the program to see — you'll probably find it'll run.

DISK DIRECTORY

Dear Rae,

I've been frustrated by the DIRECTORY command on the C128, because, while it is capable of giving wild-card directories, I've seen no documented means of listing all the PRG files or SEQ files on a disk. The following syntax does exactly what I wanted, and I thought your readers might appreciate it: DIRECTORY "*=P" lists all program files on a disk, and S, R, and U list sequential files, relative files, and user files.

John Elliston, Beckenham, Kent.

Yes, that is right. The 128's DIRECTORY command mimics the LOAD "$" type of command, (at about DA90 in the 1571's ROM) but prints out the result rather than storing it in memory. LOAD "=P",8 then LIST is the 64 equivalent of DIRECTORY "*=P". Other pattern matching rules are listed in my 64 book on p. 520; their 128 equivalents are DIRECTORY "64*" and DIRECTORY "??ML*", illustrating pattern matching and wild cards; these would display all files beginning with 64, and all files with ML at 3rd and 4th positions; DIRECTORY "MUS*=P" which displays programs only beginning with MUS; and DIRECTORY "NAME" which displays the directory of one sole file.*

If on the other hand you want to know how the various freeze-type copiers work, these have a modified hardware reset; in the 64 for example, grounding the GAME line switches in a whole new ROM at the high end of memory, retaining RAM, which allows a program to be copied.

(2) Disabling Run/Stop is only relevant to BASIC programming: ML programs aren't influenced by this unless specially programmed. (So I infer from your letter that you program in BASIC; and use tape storage). A number of POKEs disable it, by altering the usual keyscan sequences. My 64 book has almost a whole page of these; POKE 808,234 is a good example — it disables Run/Stop, and Stop/Restore, but leaves the clock (TI) working. It has an interesting side-effect of making BASIC listings unreadable. Obviously there's a problem — this poke will only take effect when the program is run.

(3) A tape loader with a picture can't be done without rewriting the tape loading and saving routines; this means a complete machine language rewrite, or the use of a utility program written by someone else. This is a good ML exercise; basically, use bit 3 of location 1 to write to tape, and register DC0D to read the bits back. The picture, its colour RAM, VIC chip settings and a couple of other locations have to be set too.

MSDOS AND 128

Dear Rae,

'I've recently purchased a Commodore 128D and the manual says the disk drive can read other formats. Unfortunately the examples are not very clear. As a small business user, I would very much like to be able to read MS-DOS data disks. Is this possible?'

Colin Stephens, kingston upon Thames.

The 1571 drive is designed to work with MFM recorded CP/M disks; the point is that the 128's memory is too small to handle MS-DOS-type programs, so Commodore didn't include MS-DOS formats in the disk's ROM. I've occasionally tackled this sort of problem by using a disk reformat program on a PC-type machine, which copies a disk in an MS-DOS format into a CP/M format, which a 128 can read. Be warned though that the data may be stored in ways, for example with bits set or included control characters, which your 128 programs will have to interpret.

JOYSTICK AND KEYBOARD

Dear Rae,

'I'm programming a game using both joysticks. Or, as an option, one player can use the keyboard. I'm trying the keys <,>, and / as left, right, and fire, but the space bar fires too. How can I make my program foolproof? Can I disable the space key with a poke?'

C.K. Sayer, Corringham, Essex.

This is quite complex. The 64's keyboard is wired in an 8 by 8 row and column arrangement, and one keypress is detected by its electrical grounding effect. A keyboard used by two people at once causes problems: for example, pressing Z and 2 simultaneously closes out much of the keyboard.

The same wiring is shared with the joysticks, so the two inseparably interact. Joystick ports 1 and 2 act slightly differently, because the keyscan writes to the column location (56320) and reads back the row (56321) to check for a 0 bit, and these two locations also register joystick movements. So, for example, a joystick in port 2 alters some keys; holding the stick right, and pressing V, has the same effect as the Run key. A joystick in port 1 actually generates spurious characters.

Unfortunately, it is impossible to completely avoid these types of effect. If you look at a table of keyboard decodes (p.160 in 'Programming the Commodore 64') you'll appreciate that there are many groups of keys — eg K,M,B, and H — so arranged on the keyboard that when 3 are pressed the fourth cannot possibly be detected one way or the other. And all the keys are treated by Basic as interacting with the joysticks.

It's possible to go some way in BASIC towards isolating the joysticks from the keyboard; for example, POKE 56333, 127: POKE 56323,255 turns off the keyboard interrupt and also configures the keyscan register for output. But even so, combinations of keys mimic the joystick — space bar with M acts like the fire button.

I'd suggest you write your program to use 2 joysticks, or, if you must use a mixture of keyboard and joystick, write a machine-language routine to scan the keys for valid key combinations.

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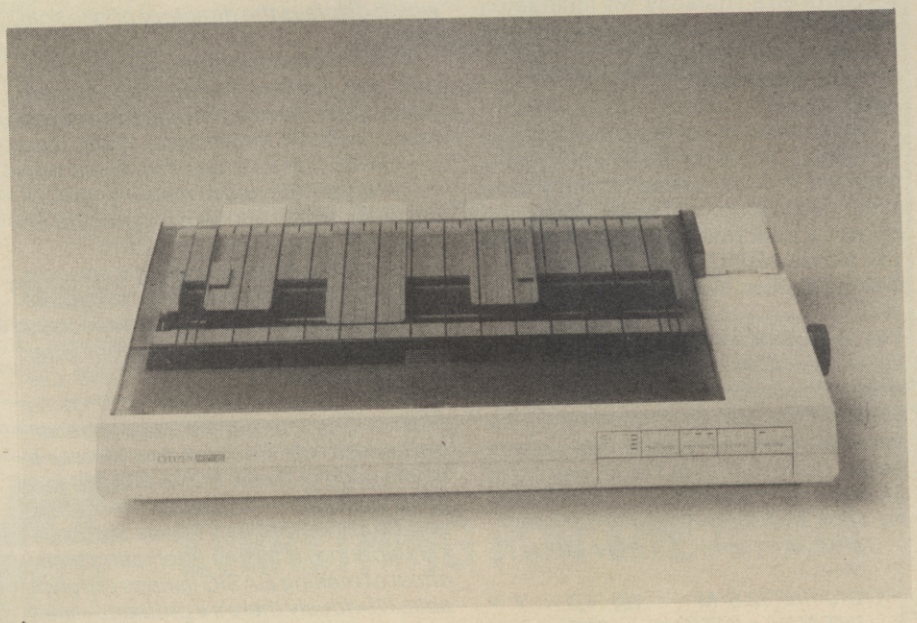

One dilemma often faced by computer users is the choice of a printer. Do they go for the slow, text only but high quality dot matrix type or for the high quality text and graphics laser printer? If judged on specification only then a laser printer would be the obvious choice. Unfortunately laser printers have a price to match their quality . . . HIGH, still commanding between £1,700 and £3,000 for a basic model. There is, however, an alternative starting to make its presence felt in this highly competitive market — The 24 pin high quality dot matrix printer.

Citizen, as usual, have been quick to take advantage of the interest shown in this area and have brought out their own 24 pin wide bodied HQP-45. It is capable of producing very near letter quality text and graphics at resolutions of up to 360 x 180 dots per inch. It will print at speeds of up to 200 characters per second in draft mode, 132 CPS in correspondence mode, and a respectable 66 CPS in its letter quality mode. All of these options plus proportional spacing in letter quality mode can be selected via touch switches on the front panel. Both serial AND parallel ports are provided as standard, as are semi-automatic paper load and a healthy 24k print buffer. 32 small dip switches enable the user to select or change almost any of the HQP-45's print options or special features but, unlike many other printers, they are all easily accessible beneath a neat flap on the FRONT of the printer. When first powered on the HQP-45 emulates the Epson LQ 1000 and has two resident typestyles; Courier 10 and Prestige Elite 12. However, optional compatibility with other popular printers such as the Diablo 630 or IBM's ProPrinter can be achieved by plugging in one of the Citizen (credit card size) IC emulation cards. Likewise, there are IC cards to add extra fonts like Futura, Optima, Helvetica, Univers, Times Roman and many others.

Very Flexible

I currently have three different computers (an Amiga C-64 and IBM PC AT) all accessing the same printer via a switch box. With my old printer, making the necessary printer changes when swapping between computers used to necessitate unplugging the printer and then performing some pretty imaginative acrobatics to reach the dip switches located underneath. It now take me no more than a couple of seconds and without breaking out into a sweat. The only criticisms I have of the printer lie in the design and construction of the two part lid which I find a little awkward to use. The sharp edge provided on the front lid to help tear off sheets is not very effective. I would have much preferred a more usual fine serrated edge. Still, I am very impressed with the printer. It's very flexible especially when used in conjunction with the font and emulation cards and it is capable of producing excellent quality print while maintaining a sensible rate of knots. So, if you have a requirement for a 'letter quality' printer, would like the advantages offered by a wide body carriage, don't want to be stuck with the limitations of a daisy wheel and yet can't justify the expense of a laser printer than all I can say to you is . . . HQP-45!

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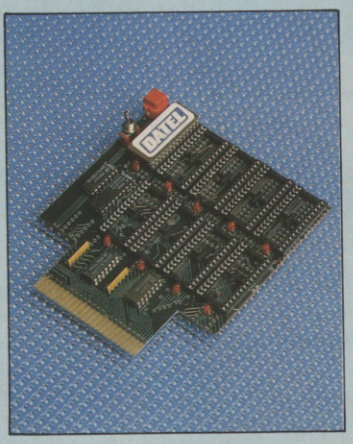

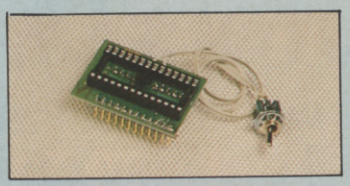

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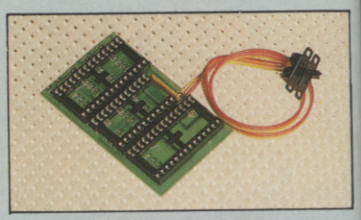

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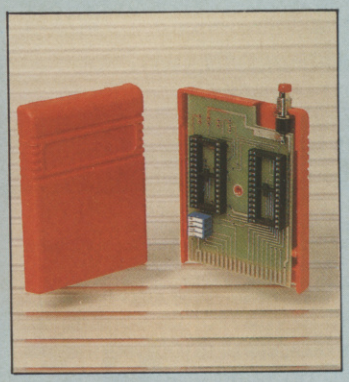

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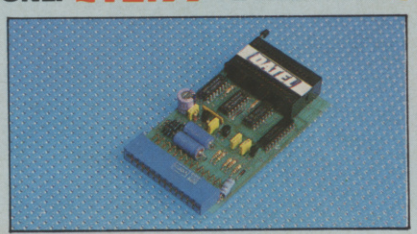

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- Simple to use: just press the button and make a complete backup: Tape to Tape, Tape to Disk, Disk to Disk, Disk to Tape. – THE PROCESS IS AUTOMATIC – JUST GIVE THE BACKUP A NAME.
- All backups will reload at turbo speed independently of the cartridge.
- Dual speed tape turbo system. Programs can load up to 3 times faster than commercial turbos – that's over 10 times normal Commodore speed.
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Compare these (accurate!) figures for some rival backup systems:

SYSTEM	LOAD TIME	PROGRAMS PER DISK	CARTRIDGE REQUIRED?
ACTION REPLAY MK III SAVED WITH NORMAL TURBO	25 SECS	THREE	NO
ACTION REPLAY MK III SAVED WITH WARP*25	9.8 SECS	THREE	NO
FREEZE FRAME (MK IV)	40 SECS	TWO OR THREE	NO
FREEZE FRAME (LAZER)	25 SECS	TWO	YES
EXPERT SYSTEM	30 SECS	THREE	NO

All purchasers of Action Replay III will receive WARP*25 FREE with their cartridge. Existing Action Replay III owners can obtain WARP*25 Disk turbo by sending £2.50. post free. (No need to send your cartridge). OR obtain it FREE on the Enhancement Disk (£7.95).

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The best collection of tape to disk transfer routines for nonstandard multiload programs (eg Dragons Lair I and II, Championship Wrestling, Summer Games, Ace of Aces, Gauntlet, Supercycle, Marble Madness, World Games). 31 titles in all. Uses our unique parameter system. No user knowledge required. Turboload throughout. NOTE: Standard cartridge transfers normal multiloaders eg Winter Games etc. etc. Disk includes file copy and disk backup utilities.
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100% Success? Rival Claims? Who's Kidding Who?
Action Replay Mk III will backup any program which any other cartridge can backup – and more! It also has an unmatchable range of features. Consider 'Freeze-Frame' for example, which uses more disk space, saves at slower speed, has slower tape loader, has no built in disk fastloader, no picture, Sprite or restart features and costs £10 more than Action Replay. So who's kidding who? Buy Action Replay Mk III. If you find that it does not live up to our claims return it within 7 days of receipt and your money will be refunded.

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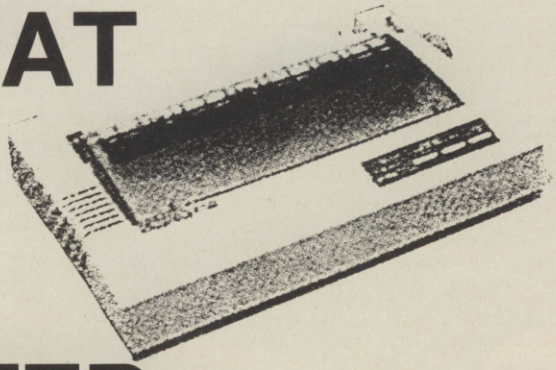

CITIZEN 120D PRINTER

You can play games but you can't do much else of real value on a computer if you don't have a printer. So because we here at CCI want you to enjoy yourselves and really get the most out of your computer, we have talked those lovely people down at Citizen into putting one up for a competition. (The winner should write a nice letter to Rosemary a truly good Citizen!) The 120D is a terrific printer — just ask Ian Bennett, CCI's technical wiz. We've heard that he loves this so much that he's moved his wife out of the bedroom and moved his 120D in. Strange guy, that Ian...

Still, there is no doubt that loads of people all over the world are finding it a great printer — it is getting into lots of schools in the UK too. Probably because it is very easy to use.

So to win this hot-shot printer for the cost of absolutely nothing — except the stirring up of the old grey cells — no-one without a brain is allowed to enter this competition! — all you have to do is tell us:

Who invented movable type (printing press style)?
Give two meanings of the world "font".
Give us the name of another Citizen printer.
Who prints CCI? (anybody mentioning Bob Collyer will definitely fail this question — it is a company not a person we want!).

The card with all correct answers drawn out from the CCI Comp Sack will win that terrific Citizen Printer.
Answers on a post card, please to Citizen 120D Comp, C/o CCI and they must reach us by October 15th 1987.

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VISITING ARCADIA

The trouble with arcades, Andrew Cash CCI's coin-op besotted correspondent, would tell you, is that they spoil you for home computer games. The 16 or 32 bit boards inside them give a scope for detailed and exciting graphics and game play that no home computer can hope to equal. That is, of course, until the Amiga came along. When that happened, the monopoly that the big arcade companies had over the coin-op machines began to crack. And who put the two ideas together and put their chisel into that technological crack and jerked it open? None other than our dear old £1.99 friends who also broke open the home computer market — Mastertronic. What they did in busting up the full-price game market and taking top spot for sales — at least in the U.K. — with their budget home computer games, they intend to do the same in the arcades.

Mastertronic have set up a company, Arcadia, headed by Justin Heber, an enthusiastic American and have a gameplan to make the coin-op market meet up with the Amiga and Zingo! it will mean games being written on the Amiga for the Arcades and then, far more quickly than usual conversions, reaching the home computer market — admittedly on the Amiga only to start with.

Because the Amiga has such terrific graphic and other game-style qualities, Arcadia has done a deal with Commodore to take the Amiga PCB's — printed circuit boards — and after writing the games on Amiga development machines — burning the games into the Amiga PCB eproms and distributing the PCBs around the world to arcades. Not only will that be good for Arcadia's business, they claim that it will be even better for arcade owners. For the ease of installation and cheapness of

the boards will make them a much better investment for arcade game distributors and arcade owners. And ultimately it will be best for the gamesplayer who will be able to buy for their Amigas virtually the exactly the same game they have been playing at high coin expense in the arcades.

Cyclical Success Phenomenon

Most arcade games are created in Japan. That is partly due to the Japanese having grabbed close to a monopoly of the manufacture of the PCBs and because they have the resources to employ huge teams of programmers to work on the games. Names like Taito, Namco and even Atari are Japanese owned. Atari Games Company is entirely separate from the computer manufacturer and was bought by Namco not long ago. Arcadia, Mastertronic's newly formed subsidiary, is attempting to break into a tough market. They intend to do it by laying considerable emphasis on games development. They know that companies like Namco and Atari have around 250 people solely devoted to developing arcade games — a size of team that makes every home computer company look small. But Arcadia believes that with the "enormous resources" of Mastertronic which claims to have some 200 programmers of its own working on games it can move into that big arcade league.

The advantage that Justin Heber sees, is that with the development taking place on the Amiga, the huge resources of the Namcos and Ataris will not give them any real extra clout. The Amiga is clearly a key factor in the Arcadia strategy. They have a five year agreement with Commodore and if CBM were to upgrade to the 68020 chip, the extra power would only be to Arcadia's benefit. Further the tremendous depth of talent that exists in general in the Commodore world, that has shown itself on the 64, will counter what Heber calls the "Cyclical Success Phenomenon" — how any group of programmers go through periods of stagnation, which can be particularly damaging if they are largely in-house as in Japan.

Not the ST

Why the Amiga? There are other 16 bit machines available. Arcadia did consider the Atari St but it did not have the capabilities that were necessary especially in the graphics areas. And Commodore were very receptive and very enthusiastic. Not surprising when you think that the huge opportunity it provides to get gamesplayers buying Amigas. If they want these games, and Arcadia promises that they will be up there with the best coin-ops, then why should they settle for laboriously converted substitutes?

Heber says the Arcadia's coin-ops will be available to home users about 90 days after they get to the arcades. Now it takes months or even years...

Arcade owners get several options for games. They can buy a whole machine which is rather expensive or they can buy replacement games in various ways. Justin Heber says that Arcadia will be able to offer the Amiga PCBs very cheaply indeed — more cheaply than anyone else. They will offer the PCB with a "piggy-back" memory board that will allow 1.5 megabytes. They will be using reprogrammable rom chips and they will offer an exchange programme and accept back old memory boards.

Many arcade owners are hesitant to take new games because they don't feel technically competent to fix in the required electronics. Arcadia's plan is to make it so simple that it will be within everyone's reach. Justin Heber demonstrated how easy it was to slip in and out one of the Amiga PCBs. It took precisely 40 seconds and was no more complicated than loading a cassette — and in fact less hit or miss!

Of course, the crunch question is not how easy it is to put in the games but will the coin-op spending public like the games. CCI got a look at the first three that Arcadia will release. They are likely to make a solid impact. The first is already completed — just 9 months after the project was started. It is the well-known Rockford. It is a game whose addictiveness had obviously reached the Mastertronic staff — and Justin Heber when he demonstrated it seemed unable to tear himself away even though he must already have played it many times. It has many levels in which the unflappable hero is challenged to all sorts of difficult tasks from hunter to chef, deepsea diver and so on. Speed of reflex is the way to this one.

The second game — as yet incomplete is Road Wars; brilliant graphics as an extraordinary highway circles *outside* the earth and throws up obstacles and missiles in your speeding path. This has a two player, Gauntlet-type option, where you can together attempt to beat the terrically fast-travelling road.

The other game we saw was only at its beginning stages and has a working title of "AAAARGH". Not very explanatory but if you can imagine Godzilla eating up everything in sight then that will be you. It's a fun game — in spite of the gratuitous violence that, as someone said, "is sure to make it a hit". And has some nice touches such as when your equally grotesque partner and Godzilla turn on each other and fight.

They are also preparing the coin-op version of the latest James Bond film "The Living Daylights" (and creating the 64 version for Domark too). Altogether they see about 12 games coming out each year — some being programmed in the U.S. where at present the expertise of the Amiga is substantially greater but others in Europe. They have already shipped samples to Japan, the U.S., U.K., West Germany, Holland and Spain for evaluation. There seems little likelihood that there will be anything but enthusiasm.

Amiga Budgets

Changes in this world often take place almost imperceptibly but they always have a knock-on effect. As Jeff Minter has pointed out, the Amiga started as a games machine concept. Arcadia — Mastertronic — are taking it back where it began. Commodore's creation of this 16 bit graphics wondrous computer will make it easier to put good games into arcades but it will, according to Arcadia's plan, also put those games back into the home computer user's grasp. Better games, bigger games, more realistic games at, they say, around £9.95 — roughly equivalent in Amiga terms to the £1.99 they charge for 64 cheapos now. And with quality games at that price who is going to want to pay the same for 64 product? Which means that Commodore will stop selling big quantities of 64's and it will cry all the way to the bank at the number of Amiga 500's that will disappear from the shops. And the new owners will get good Amiga software at the old full price for the 64. Could be that everybody's going to be happy...

Or is it all an illusion? Would you know an Amiga PCB if it snapped at your ankles? Was Mastertronic — and the frenetic arcade games player Justin Heber — just sending us up? Was it some Mastertronic hoax? Were Frank Herman's twinkling eyes hiding some huge joke? While Arcadia's Heber jerked desperately at a joystick to make the Godzilla lookalike munch up the scattering humans and stomp the skyscapers, we noticed at the bottom of the large arcade machine, a familiar sight. It was the smooth grey-fawn corner of a real computer poking out of the base of the wooden arcade box. it was the corner of an Amiga 1000. Inside that great big stand up coin-op machine "AAAARGH" was running off a *real* Amiga. No none of your high tech PCB rubbish, a senior Arcadia executive admitted, this was an Amiga that had been jury-rigged to let them take a quick look at the games progress as they came in. Just a common or garden Amiga. And Heber continued to sweat at monster munching.

We were convinced. When you see an arcade game — a real arcade game — running on the same Amiga that you use in the office then you know that you have seen the gamesplaying future and Arcadia is its name.

A.M.

WIN! WIN! WIN! A LICENCE TO KILL!

Well not exactly... How about a framed 'Living Daylights' poster and a James Bond keyring instead?

Dashing Domark who are releasing the computer game based on the latest James Bond epic want you personally to remember forever the hero of so many action-filled films and books. The film has one of the best opening sequences ever but after that is really only for fans of the explosive — the T.N.T. kind — action. But the Domark computer game takes some real settings from the film and gives you the chance to play Bond and beat the villains. As usual with Domark's tie-ins 'The Living Daylights' computer game will probably sell like... well, like military arms to a dictatorship to use an image from the movie.

If you'd like a James Bond Living Daylights full size poster and keyring that you whistle for and it beeps back to you (in the film it explodes too!) all you have to is tell us.

1. **Who wrote the James Bond books?**
2. **What was the first Bond film called?**
3. **The names of three actors who have played Bond on screen.**
4. **The name of two other Domark games.**
5. **Where the name Domark comes from**

The first 10 out of the comp sack by 15 October 1987, will get the prizes. Answers on a postcard marked 'Living Daylights Comp' c/o CCI, 40 Bowling Green Lane, London EC1R 0NE.

C64

CRISP

SHADOW SKIMMER

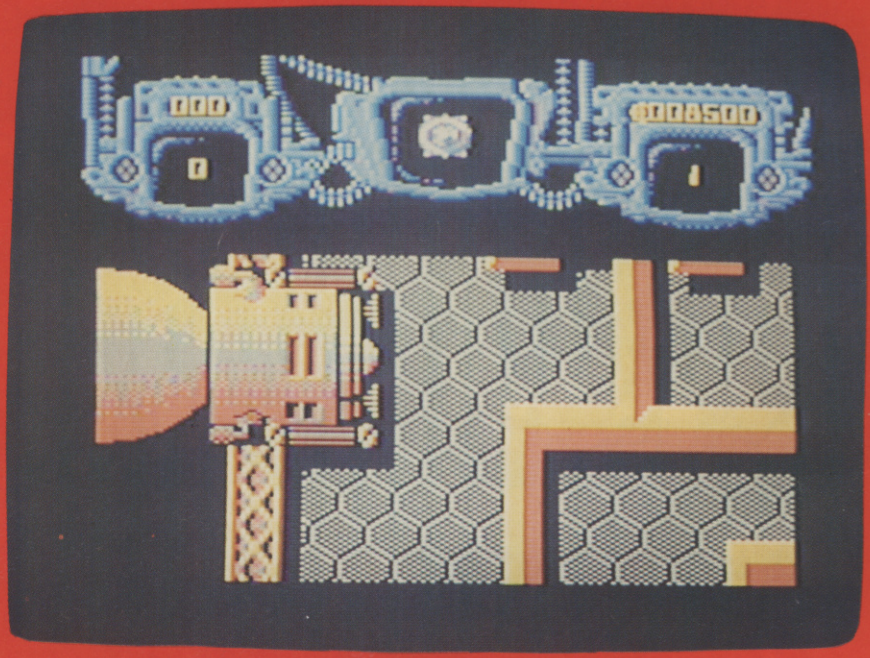
The Edge

Shadow Skimmer was originally written for the Spectrum, and has now been converted to the '64. Instead of trying to make an exact copy of the Spectrum version, which seems to be the done thing at the moment, The Edge have been very sensible and greatly enhanced the '64 version. Because of colour problems, the Spectrum original was in a flip screen format. However, the '64 version makes very good use of its scrolling abilities. This is something I'm sure we'd all like to see more often.

Shadow Skimmer takes place on the deck of an interstellar liner somewhere in space. It was your turn to take a jaunt outside the liner to check that the defence and maintenance systems were working OK. After checking the systems and returning to the entry hatch, you found it to be jammed! The only other way in is through the mainship hatch at the other end of the liner. In your Shadow Skimmer craft, you must destroy the key defence gizmo on each of the three sectors — not an easy job!

The game is played rather like Paradroid, being viewed from above and consisting of a maze of corridors and rooms with nasties to be shot. Some walls cannot be passed, but some you can fly under. At certain points along the walls there are doors. To get through these, you must flip your skimmer upside down. This can only be done away from deck structures and causes a loss in speed, so it's best to flip back as soon as you are through.

There are a number of defence mechanisms around the liner from which nasty kamikaze alien thingies appear and sap your energy. Each of the defence gizmos is located on the underside of the liner. To get to these you must travel through hatches by waiting over them and holding down the fire button. This can prove quite tricky as they are located near the alien spewing devices, causing you to be bumped around like a pinball. Once you are through the hatch, you must find and destroy the gizmo, or find another hatch, allowing access to different parts of the ship.



The graphics on the main play area are good, although not very colourful. The sprites are imaginative and colourful, and move smoothly. At the top of the screen is the status area with a very attractive high-tech surround with VDUs, cables and the like.

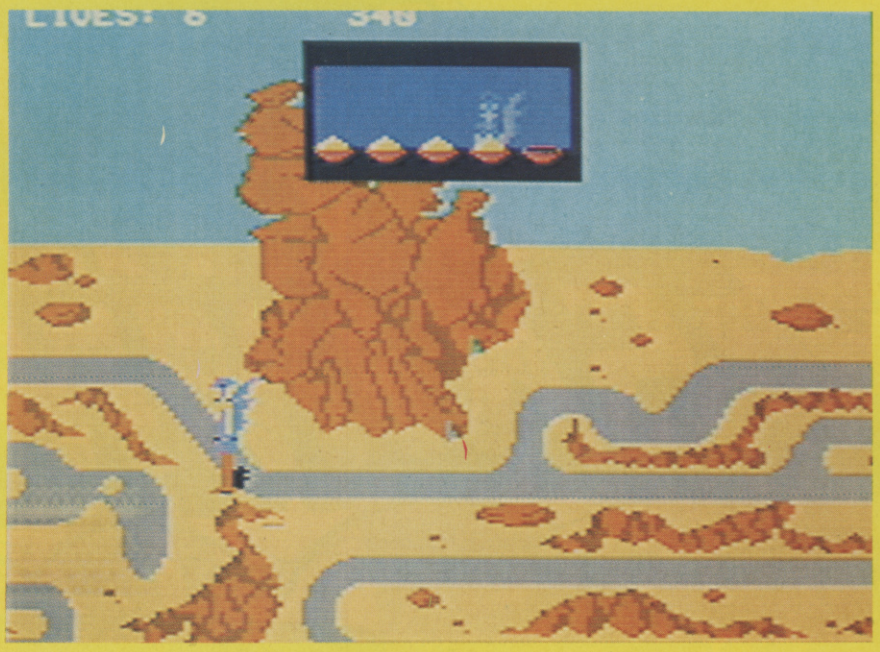
David Whittaker has done a good job with the sound effects, and the music by 'Demon' isn't bad. Shadow Skimmer is very well presented, with fast, smooth scrolling, a nice picture on the title screen, and very professional feel to it, although the gameplay doesn't quite come up to this standard. I can't say Shadow Skimmer is my favourite shoot 'em up style game, but you could do far worse than this.

T.H.

Price: £8.95 (c)
Graphics: ★★★★
Sound: ★★★★
Playability: ★★★
Rating: Crisp

C64

MEGA



Road Runner — US Gold

After being run over, blown up with dynamite, bounced on, rammed by rockets and skateboards, frazzled by cannon balls and fallen down the umpteenth crevasse, I've finally dragged myself away from Road Runner to write this review.

Converted from the arcade machine, Road Runner is all about those two crazy cartoon characters Wile E. Coyote and Road Runner. If, like the Ed, you've had your head in a bucket for the last twenty years, you won't know that in the cartoon, Wile E. Coyote, a kind of wild dog, spends all his time dreaming up all sorts of wierd devices to catch Road Runner, a cheeky ostrich-like bird who runs so fast, his legs are just a blurr.

In the game you take the part of Road Runner, constantly pursued by Wile E. Coyote. The aim is simply to stay alive and collect seed as you go. The game is played on a series of roads and paths in the desert which, on the whole, scroll from left to right. To start with, Wile just chases you on foot whilst you dodge the trucks in the road. If you're good enough you can lure Wile in front of one for extra points and time. If Wile disappears for a second, don't think you've got away, because he'll be back with one of his inventions, be it a rocket powered skateboard, a dynamite loaded jet-pack, a pogo-stick or a rocket. This makes life a lot tougher for a poor old Road Runner, as instead of out-running him, he must use his ability to nip in and out to confuse Wile.

The roads and paths are split into 4 levels that load separately. Yes, the dreaded multi-load strikes again. I realise it would take a little more memory, but I wish US Gold would use a multi-load like Software Projects' Dragons Lair that loads as you play.

As you complete more levels, the paths get smaller and more twisted, and the hazards mount up. To add to Wile, there are rockfalls, cannons and crevasses. Bonus points can be scored by killing Wile by luring him in front of cannons, trucks, boulders, mines, and making him fall down a crevasse. A special 'tongue bonus' can be got by letting Wile catch up with you, so he reaches out to grab you, and then accelerate away like the lazy Road Runner you are!

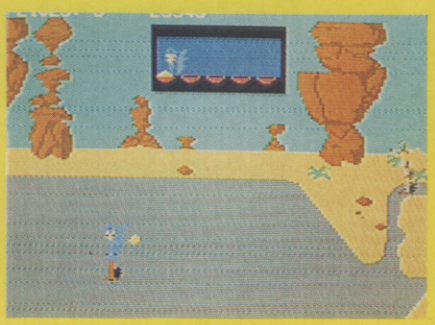
The sprites are excellent and look just like the cartoon drawings, with the blurred wheel effect of their speeding legs. The backgrounds scroll smoothly and have the same rocky scenery as in the cartoons. Although the trucks are a little blocky, they're well drawn.

Some great tunes play during the game, like the William Tell Overture (that's the Lone Ranger music, cretin!) and really suit the game. When a level is completed, the 'That's all folks!' looney tune plays, but the whole tune is played before the next level loads. Wouldn't it have been a good idea to have this music play as the level loads? — I'm sure that wouldn't pose much of a problem.

I did encounter one bug — if Wile gets you with his rocket on level two, it's sometimes impossible to get round the path, as the program only allows a small distance to be travelled to the right.

Minor grumbles aside, Road Runner is an excellent game that captures the feel of the cartoon brilliantly. One of the very few arcade conversions that deserves to top the charts on its merits, and not because of the name.

T.H.



Price: £9.99 (c) £14.99 (d)
Graphics: ★★★★
Sound: ★★★★
Playability: ★★★★
Rating: Mega

Thrill to the action as the legend comes to life!

INDIANA JONES and the TEMPLE OF DOOM*™

The Home Computer Version of the Atari Coin-Op Masterpiece

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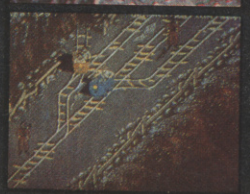
You will call on all your reserves of courage, strength and skill. Push yourself to the limit, ride your luck and the magical stones may just be yours!



Screens from Arcade Version

ATARI® GAMES

COMMODORE 64	CASSETTE	£9.99	DISK	£14.99
AMSTRAD	CASSETTE	£9.99	DISK	£14.99
SPECTRUM 48k	CASSETTE	£8.99		
ATARI ST			DISK	£19.99

US Gold Epyx

Major players in a World game

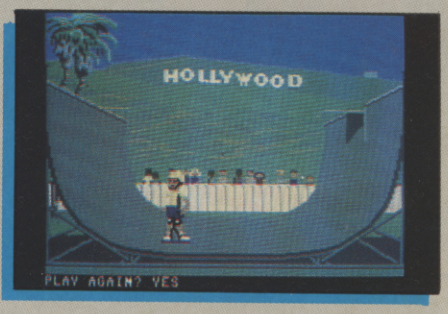
Outside the five star luxury hotel in London stood a bright red Ferrari. No, it did not belong to Geoff Brown of US Gold who was waiting inside the hotel. Brown has recently sold his famous Testarozza Ferrari "It kept breaking down," he told CCI, and has bought a more reliable automobile thoroughbred-a Porsche. He has also taken another, probably more important business step by forming a closer association with that top of the range US model entertainment software house, Epyx. With senior Epyx executives, the Boss of US Gold Empire has been touring the major capitals of Europe in a promotional roadshow that has put the name Epyx firmly onto the non-US map.

Epyx has always been known for outstandingly well put together software. World Games, Summer and Winter Games, Super Cycle, Championship Wrestling, Hot Wheels, Pitstop, Impossible Mission and many others have been international successes. They have generally been released outside the US under the US Gold label. Now, it seems, US Gold is set to help build the Epyx name internationally into a seller in its own right and there are some highly interesting new games coming along with which to do it.

However the closer relationship between these two transatlantic games giants does not stop there. For the US Gold/Epyx Roadshow was also intended to emphasise that there was also going to be a forceful movement in the other direction too. Epyx now is going to lend its undoubted strength to the distribution of US Gold's growing number of home-grown products into the rich US market. This could be of equal importance to US Gold, for as CCI recently reported, US imports are becoming a much smaller part of the total US Gold output of games.

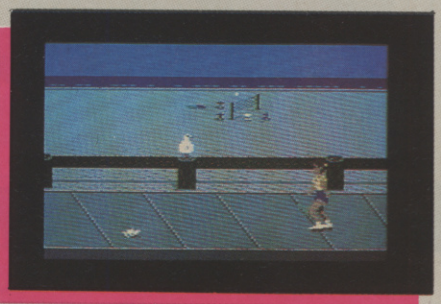
$20 Million

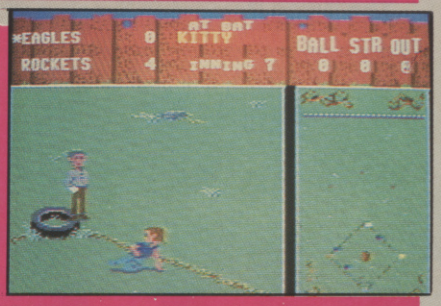
Epyx has a substantial record to build on. Since it was formed 9 years ago, it has been a leader in



quality games and other home micro products — especially in the US. Its sales of over $20 (around £14 million) make it substantially bigger than US Gold and probably number two to Electronic Arts. In the past two years, it has achieved a staggering 500% increase in its sales but only about one sixth of that was gained outside the US. And that is where US Gold comes in.

US Gold has signed an exclusive agreement that gives it the right to represent Epyx throughout Europe. Previously in each country Epyx had different licensees.





Now Epyx will depend exclusively on US Gold to carry out the monumental task of co-ordinating releases of products and release dates, managing the conversions in each country and providing the marketing, advertising and PR muscle.

The channelling of the whole European Epyx push through US Gold is based not only on recognition of US Gold's marketing flair but also the idea that Epyx products should be handled in Europe by Europeans. "We're not coming over here telling Europeans how to market in their own countries" John Brazier, Epyx Senior Vice President told CCI. "And even when we create the products we'll be thinking of European tastes."

US Gold's commitment to the Epyx drive into Europe is signalled by an unusual step for a non-US company to take. It has appointed a special product manager to handle the whole complicated area of marketing another company's products. Helen Browne is clearly an efficient and intelligent addition to the US Gold team and while remaining within the US Gold organisation, she is already a single minded Epyx promoter.

For Epyx read Konix

Making up the Roadshow was another heavyweight Epyx executive, Gil Freeman — the Epyx President — who rated a mention recently in Super Felix. Freeman has been running Epyx, taking the operational and financial responsibilities of the company. His serious tasks do not however seem to have stopped him from keeping up with the games for he was an enthusiastic demonstrator of the new wonders that Epyx has in store for us. The joystick he used had a familiar look about it. He proudly showed us the Epyx label. Yes, he agreed. It should be familiar though for it was none other than the well-loved Konix joystick that has brought Wyn Holloway fame and fortune in Wales. The joystick is selling very well n the US carrying the Epyx brand. Epyx are reputed to have taken over half a million and Freeman told CCI that Konix was working on other control devices for them including a mouse.

David Morse, the new Chairman of Epyx was not on the road. A pity, for David Morse was the founder and boss of Amiga Computer and stayed with the company that developed Commodore's hope for the future even after CBM bought Amiga Computer out for some $25 million in 1984. It would have been interesting to have his opinion on CBM's performance on the Amiga.

Freeman's enthusiasm for Epyx new games was shown previously to his arrival in London. At the Consumer Electronics Show in Chicago in May, on the Epyx stand he and everyone else turned out dressed for the Pacific sea shore and with the music of the Beach Boys blaring got everyone wishing they could be in California... to introduce one of Epyx new blockbusters: California Games. Summer, Winter, World and now California. California Game will take you to famous spots like Hollywood, Venice Beach, Berkeley, and Yosemite Park to compete in some really rad sports. Freeman showed CCI how to shred the face of a totally tubular wave in the surfing event and tic-tac to the top of the skateboard half-pipe. There are also those sun-soaked sports of BMX, rollerskating, footbag and frisbie throwing — although for copyright reasons it isn't called that. It all looked suitably East Coast laid back and as much fun as California's many terrific "sports" predecessors.

Street Sports

Another biggie from Epyx will be Street Sports — not so much a game but a whole series. As CCI reported a couple of months ago, Andrew Spencer an ex-Brit, created this series where sports that are becoming familiar to non-Americans — and even some that originate outside the States like Soccer — are played by a bunch of kids with slightly loopy names like "Radar" and not forgetting girls like "Melissa" each of whom has his or her own character — and there are sixteen of them — and his or her own level of skill at each game. The first title to be released in this series will be Baseball. It will be typical of a real-life style pick up game played in the streets by ordinary (?) kids—Radar can apparently tell where the ball is going every time! CCI also saw Basketball which looks a very smart and playable game — there was even a patch of oil on the street — isn't there always? — so that the less sure-footed kids would slip and add to the difficulty of the game.

On the stocks was Impossible Mission II – I.M. I interestingly, was more successful in Europe than in the States. And Epyx have some well-reviewed home productivity products too. They introduced at the CES, Print Magic — a graphics tool with a wide variety of options for text and graphics. And they have already a substantial number of other home productivity tools that US Gold will handle.

Major Players

The combination of US Gold in Europe and Epyx in the USA is obviously a very powerful one. Their united strengths supporting each other's products must be creating one of the major players in the world wide business of home entertainment software. While there was no suggestion that there was likely to come about any uniting of the companies, their combined sales probably make them roughly equal to today's number one in world entertainment software, Electronic Arts and so a force that will influence big parts of the market and, in effect, our range of choice of the games we play. As the big and richly profitable home software market becomes more international and more reachable, we are beginning to see the emergence of a series of "major players" going for big slices of it. For it is in itself not unlike a computer game in which you eat up your opponents and dominate the field — if you can. The US Gold/Epyx combination looks to be one of the strongest yet. When the giants are fighting for the top spots and the big money, US Gold and Epyx will be there among them, perhaps even the number one. Outside the red Ferrari was gone. Maybe for the whole software industry the Ferrari days are going and like US Gold's Geoff Brown we are settling down to Porsches — beautifully engineered, very reliable, tastefully expensive and rather more business style vehicles,not unlike the image presented by US Gold and Epyx. □

WAR IS HELL!

There is nothing quite like a good strategy game to get the military mind working and to bring out the commanding general in you. Andy Moss put to the test some of the latest wargames for the budding Monty.

Fortunately, for many of us, we didn't have to live through the Second World War. We've all heard our parents talk about that time, how it was so hard to buy food, the nightmare of the air raid sirens as they wailed through the still night, and the stories of liberating France and the drive through Europe. For some of us, maybe we even had a hero in our midst, hearing tales of bravery and action beyond the call of duty. This all may be so, but it is still very hard actually to feel what it was like to take part. This is what makes our 64 such a terrific piece of machinery, as quite effortlessly, it transports us back inside 3 minutes to that very time, be it Japan, or Germany, or Vietnam or the Falklands, and lets us become commanders of our very own. We control the destiny of our forces, and maybe rewrite History, see where the mistakes happened, and try our own strategies to see if they change the outcome of the given War of the time

It is highly unlikely, that warfare of the kind experienced up to 1970 will ever occur again, due to the advancement of the Nuclear Age, and it is a great testimony to the strategists that such victories were possible given the arms power then, compared to what we have today.

This is all what makes wargaming on computer so fascinating, as we can recreate the Roman Age just as easily as a nuclear confrontation (see Theatre Europe).

There are some new releases that really show what state of the art programming can achieve in the strategy market, and one or two compilations that deserve another look.

What I have tried to do is give you an unbiased view of four new releases without marks as some experienced wargamers would love a game that a relative novice may find terribly boring and vice versa. Just remember, in all cases the idea is the same, do it to them before they do it to you. Enjoy.

Conflicts 1 & 2

PSS — £12.95

These tapes are re-releases in compilation form of some of the best sellers of PSS to date. On tape 1, you get Battle of Britain, Theatre Europe and Falklands 82, whilst tape 2 comprises of Battle For Midway, Iwo Jima and Okinawa. At the price, which I feel a little bit steep, each tape needs to be of SSI standards to really be good value and these games don't compare well with the simulation experts from the States.

Each one of these games really suits the beginner wargamer, not much in the way of instructions, uncomplicated screens, and in the case of Theatre Europe, Midway and Battle of Britain arcade action sequences that the player can play. Definitely not for the strategy purist!

This doesn't mean that the games are bad, just that they are easy to understand and to play, and give some enjoyment to boot.

Tape 2 opens with Midway, and is set some 6 months after Pearl Harbour, and concerns a Japanese plan to destroy the remains of the US fleet. Midway Island had an airbase that needed to be destroyed if the Japs were to intercept the US Fleet, so they planned a massive attack on it. Fortunately, the Americans were ready for them as the enemy navy code had been broken for some time. It was a total defeat for the Japanese and proved to be the start of their downfall. The game is played over a tactical map of the Island and the surrounding waters, and you control the American forces. Three levels of play, the third being a "what might have been if the Japs knew we knew" situation. Chunky graphics, the arcade scenes are quite well done, and provide some entertainment initially, but as the pattern seems to be the same each time it becomes a little tedious.

Iwo Jima is all played out on one screen and chronicles the do or die situation facing the American forces in taking the Island. On it were some 22,000 Japanese and in fact only 216 survived but the Americans suffered enormous losses in taking the Island. It provided a key air base to support the bombing runs to Tokyo and therefore was of great importance, but the Americans underestimated the Japanese commitment.

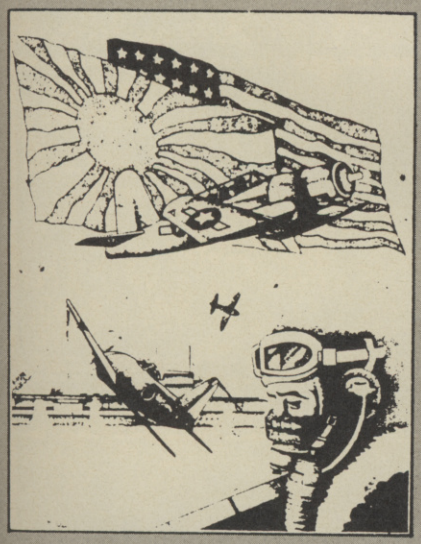
You start by landing your forces one by one onto specific beaches

and then moving out onto the island and deciding on whether to attack or move or just dig in. There is also support fire from the Navy anchored out at sea. Many different types of terrain are to be negotiated, with attacks from the enemy at any time.

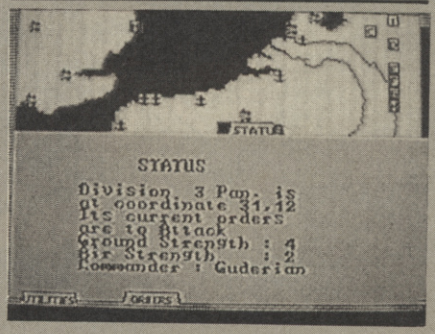
Okinawa is almost identical, but uses a different scenario, and troop numbers.

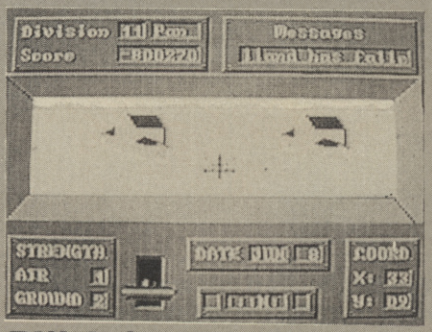
Tape 1 is the better buy of the two, as it contains the best selection of games. Theatre Europe is a very tasty work, and when it was first released I applauded it loudly. In the game you are faced with a possible nuclear confrontation, and can play either the NATO forces or the WARSAW PACT (Russia). If you play the Russian forces the object is to break the Nato alliance massed at your borders,but if you are the Nato side, you must prevent any invasion of Europe. The situation quickly deteriorates and eventually you could see how the nuclear threat can become a real possibility. Some splendid graphics here, although the arcade sequence is rather a let down, but the nuclear devastation scenes certainly aren't.

A cracking good war game that sends a powerful message to mankind, DON'T PUSH THE BUTTON! Falklands 82 is almot the same layout as Iwo Jima, but is a winner for me as the subject matter is in my lifetime, but for playing see Iwo Jima.



Finally, Battle of Britain is a well tried and tested formula, that tries to be as testing as possible, without breaking a sweat. Obviously the aim here is to pilot our boys to success over the Luftwaffe, by a combination of clever refuelling, picking the right airbases to fly from, and intercepting the enemy as early as poss. It's all jolly hockey sticks and top ho. An interesting option though is the Blitzkrieg, (no relation to the next game!) which takes place on one game day, and where the enemy has been programmed to give you as hard a time as possible!





Blitzkrieg

39 Steps/Ariolasoft — £12.99

Blitzkrieg — literally 'Lightning War' is a great game, no question about it. What Gary York, Ariolasoft's resident coder has accomplished, is a very tactical and complex scenario built and driven around an instruction leaflet that is so short it's almost a sin! You play the role of the German High Command (or Hitler depending on your ego) and the ultimate Blitzkrieg, the tactics the Germans used in the World War II initially so well but that ultimately failed due to bad planning in the wake of their huge advances. You have the chance to change history by actually replanning your assault on Europe, taking Norway, Denmark, Holland etc and planning the job so well that Britain could fall without a fight. All this can be done in 40 minutes. That is how long each game should last which is wonderful as you can try again using different strategies and see how they work out.

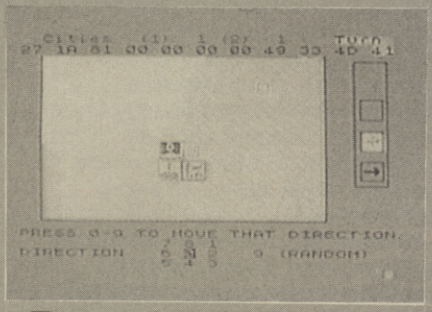
The game is in two parts, with the first part being the building stage. You have to decide how to set up your army, and this is done by the use of industrial resource units (IRU) with divisional strengths and tanks costing more in IRU's the more stronger you make them. You start off choosing the number of IRU's you want between 100 and 400.

Once your army is built, you move on to phase two, which is going to war. You get two views now, one an overhead traditional strategy map of northern Europe. The other is the actual view from inside one of your panzer commanders' tanks. This gives you a first hand account of the different terrain types and town or cities you will come across. All communication is delivered to your tanks by index windows which pop up on screen and all you do is change orders as you wish. Combine this with the best musical soundtrack I have heard in ages, real German marching music, and you have a game of immense entertainment. Highly recommended for novices and experienced games alike.

Dark Empire

Lothlorien — £8.95

Lothlorien used to produce some fairly good creative product, but this one is a stinker in my book. It is billed as a game of exploration and conquest, and concerns the forces of the Dark Empire which have taken over an innocent world at the edge of the Universe. You play the Captain of the Liberation Task Force and your job is to direct the assault on the planet. The game features a scrolling map and square icons to represent the various forces. It looks to me to be a straight Spectrum conversion that takes no account of the superior Commodore hardware. I may be wrong but it looks that way. A few pitiful bleeps are all the sound that is offered, not what we know the machine is capable of, and the whole feel of the game is quite depressing. I would steer well clear of this one.



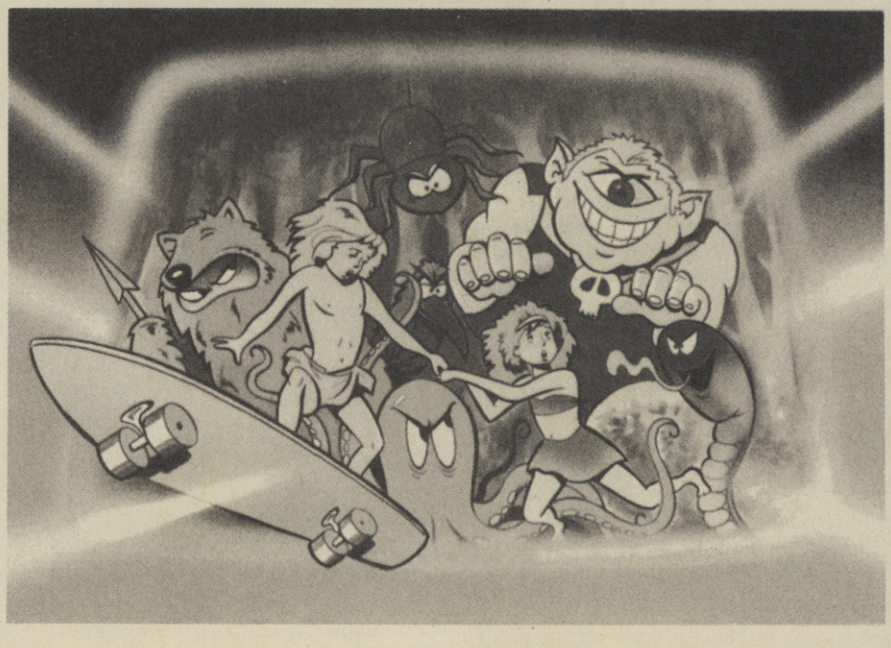
There you have it then, some good, some even better, and some just downright poor. Just make certain that you look before you buy and you won't be disappointed. For me, Blitzkrieg beats them all. Happy Wargaming.

A.M.

MEGA REVIEW

C64

MEGA



Wonder Boy —Activision

After the very disappointing conversion of the arcade Enduro Racer, Activision bring you their newest coin-op conversion — Wonder Boy.

In the game, you are Wonder Boy, a nappy-clad baby who is remarkably advanced for his age. He can run, jump nearly twice his own height, and do amazing things on a Skateboard. Unfortunately, your girlfriend has been kidnapped (again!) by an evil king, and yes, you guessed it, it's up to you to rescue her.

The game take place on various right to left scrolling scenes. Starting in a forest, you must make your way across each landscape, avoiding rocks, Killer Snails (No! anything but the snails!), bonfires and frogs, whilst jumping over canyons and platforms. Along the way you will find eggs that contain axes and skateboards. The axes come in very handy for killing those nasty snails and frogs, and the Skatebords speed up your progress. As you go forward your energy gradually runs down, and collision with a rock causes a far greater loss of energy. Fruit can be picked up on the way to boost your energy level as well as junkfood such as hamburgers and hotdogs which have the same effect. (Do you believe that?)

Wonder Boy has some similarity to Ghosts and Goblins with the scrolling landscapes, platforms, and shooting the nasties, although I don't think it is half as much fun to play.

On completion of each land, the scenery changes. For example the second land is set on small islands in the sea, with palm trees and canibals. The third is set in a ice-place.

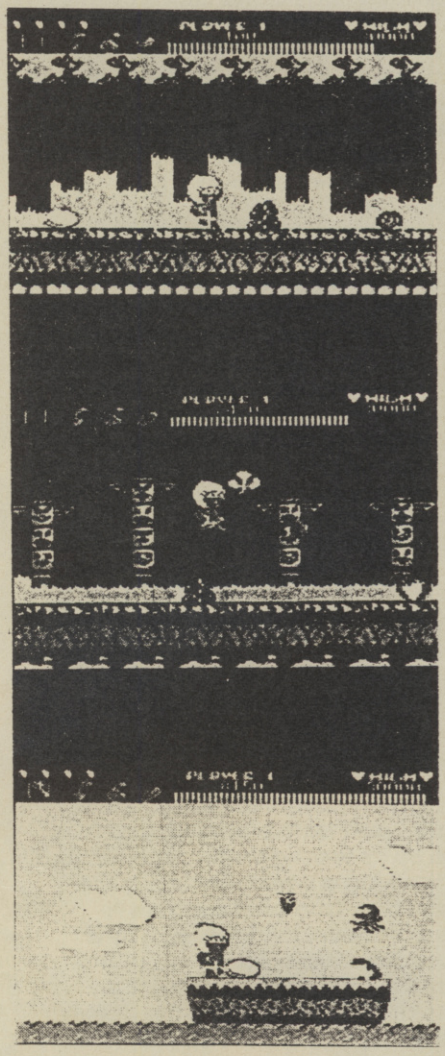
The graphics on this stage are quite hard to make out at first, due to the platforms looking very similar to the background.

On the whole, the graphics are quite colourful, but tend to be a might messy at times. The sprites are a fair copy of the arcade original although they are sometimes poorly animated. The screens scrolls well at a reasonable pace most of the time, but it jerks very badly when you stand on a moving platform.

The short simple music can fortunately be turned off. The sound effects are OK, but nothing you haven't heard before.

Wonder Boy is more playable than the Power House's budget version 'The Equalizer', but isn't really worth the £9.95 price tag unless you are a big fan of the arcade game. And 'Equalizer' was £1.99...

Graphics: ★★★
Sound: ★★★
Playability: ★★★
Price: £9.95
Rating: CRISP



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3. What do the initials USAAF stand for? .....
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4. What is Flak? .....
.....
5. (In not more than fifteen words) I would like to fly faster than the speed of sound because .....
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.....
.....

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1. This competition is open to all residents of the UK except employees of this magazine and their associate Companies, families and agencies. Employees of U.S. Gold Software, their agencies and families and friends.
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3. Entries altered, illegible or not completed in accordance with the rules of entry requirements will be disqualified.
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10. The judges' decision is final and no correspondence will be entered into.

CCI

C64

MEGA

STAR PAWS

Star Paws — Software Projects

It's a dogs life, isn't it! There you were, waiting in your kennel, munching away on your favourite bone, when before you know it, you've been kitted out in a space suit and sent to the moon of a distant planet. Due to a mix up with an astro-telex you have been sent on a mission originally assigned to Captain Neil Armstrong. On this planet there used to be a rare breed of bird known as the tasty space griffin. So tasty were these birds that they became an expensive delicacy, and then an intergalactic currency, traded on the stock market. All was well until a bunch of mercenaries plotted to mass-breed these yummy birds, causing the economy to crash and allowing them to seize power. You, the completely inexperienced Captain Pawstrong must catch or destroy all 20 tasty space griffins on the planet.

There are various method of doing this. There's the standard flying body tackle, and a number of gadgets dropped off by the scout craft that make life a bit easier. Collecting one displays its name and adds it to what you have already.

As the tasty space griffins run very fast, the rugby tackle technique can prove rather tricky, so these gadgets come in very handy. There's a rocket which you ride that gives you mega-speed, anti-grav foot-pads that have a similar effect, a rocket launcher, a zap death ray gun, space explosive, galactic burgers and matter transporters.

The action is displayed on a horizontally scrolling landcape strewn with craters and boulders. There are four planes of scrolling background that move at different speeds according to how far away they are. Most of the game takes place here, but there are a few griffins in the mines under the surface, and some more in another place that can only be reached with the matter transporter. In the mines there are light packs that must be used economically and cannon balls that can be used in the third section. Selecting matter transporter from your inventory takes you to this third scene where you must kill the birds with your cannon, judging the angle and aiming rather like Beach Head. This gets even harder when the birds bring on trampolines to bounce your shots back at you.

I've got to say Star Paws isn't that amazing to look at, there's a little flicker on the scrolling, and the choice of colours might have been better.

There are not outstanding sound effects in the game — instead a soundtrack by Rob Hubbard plays in the background. And I don't think it one of his very best.

Nevertheless Star Paws goes to show that a game doesn't need blow your mind graphics and sound to be really good fun (although it helps) and for £5.95 is very sensibly priced.

This is a great game and terrific value. I recommend this to anyone who wants to laugh and save some money, and have a really crazy, first class bit of gameplay.

T.H.

Price: £5.95 (c)
Graphics: ★★★
Sound: ★★
Playability: ★★★★★
Rating: Mega

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Starfleet command intended to send Captain Neil Armstrong to destroy this evil plot, but due to an error on the notoriously unreliable series seven astro-telex, our hero, Captain Rover Pawstrong has been sent instead. Vastly inexperienced and totally unsuited for the task, Captain Pawstrong's mission is to capture or destroy every one of the Tasty Space Griffins.

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The time is coming when the whole games world will be split. Little kids with limited pocket money will buy cheapo budget games and elder brothers with bigger wallets will be the full price guys. Already about six out of every ten games sold is in the budget range. Names like Mastertronic, Codemaster, Firebird dominate the real top selling games — and they are spreading around the world.

But cheap doesn't have to mean rubbish. There are games coming out now at £1.99 that would have merited Mega ratings full price not long ago. So this month, we are taking a quick look at a selection of budget price games that are in the shops now. Some are good, some are not so good, some are mega, some are naff. There will be more and more of them pouring out, we'll keep you updated about those to buy — and those to run a mile from.

REALM — Firebird

Realm has to be one of the worst games ever published. Pathetic graphics, sound, gameplay and no joystick control, only keyboard. There is an equally feeble, stupid story about reconstructing the solar system, but it boils down to a very boring maze game in which you must collect crowns and solve problems of how to get to other parts of the maze. The scrolling of the maze is terrible and gave me a headache. The few sound effects do more to annoy than add the enjoyment. It isn't worth wasting any more space on this game apart from advising any prospective buyers to pretend it doesn't exist.

Value Rating: 1

FORCE ONE — Firebird

When compared to Firebird's other new shoot 'em up, Denarius, Force One just looks feeble in every aspect. From the start, the tasteless colours on the drab title screen tell you a lot about the game. The game is played in front of a right to left scrolling starfield (just for a change) and is without any other background scenery which would have given some feeling of going somewhere. As it is, it feels like you are more or less stationary. Waves of weedy aliens come at you which you must shoot to stay alive. The movement of the sprites is nowhere near as professional as Denarius, and the collision detection is annoyingly inaccurate. The sound is almost non-existent — one sound effect in the whole game and no music. Steer well clear of Force One.

Value Rating: 3

KIKSTART II — Mastertronic

This is the sequel to my all time favourite budget game Kikstart. As in the original, the screen is split horizontally to show a view of the course for each of the two players. You must ride your off-road motor bike against the clock over any of the 24 courses. Among the obstacles are ramps, logs, water, springs, bricks, ski-jumps, fire and picnic tables. Some of these have to be jumped over wheelied over, and some just avoided. As well as a two player game, there is a computer opponent to race against.

Kikstart was pretty good, but this having the inclusion of a course designer, 24 built in courses, new obstacles, a computer rider and improved graphics makes it too good to miss at £2.99. Kikstart II is definitely my favourite of the lot, being original, great fun to play and cheap!

Value Rating: 9

ZOLYX — Firebird

Zolyx is a very simple game rather like the old game Frenzy. Your object is to fill 75% of the screen by guiding your dot around the screen and drawing lines as you go. On the screen are a number of dots which bounce around and will kill you if you make contact with an unfinished line. As you move your dot it leaves a trail. When you cut off an area, the smaller part will be filled if there are no dots in it. Doubling back on your line or collision with a nasty dot loses one of your four lives. Zolyx is a simple game with graphics and sound to match. I can't say I was over enthused with this, but I can see it appealing to some.

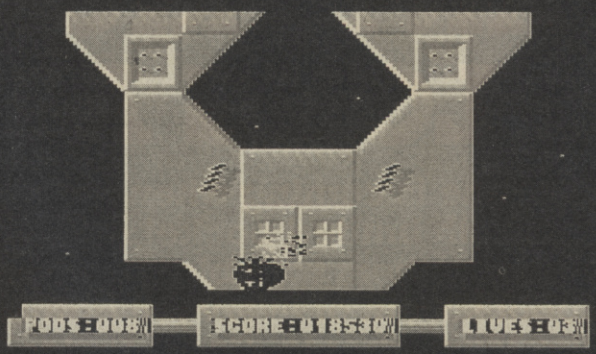
Value Rating: 6

Reviews

DENARIUS — Firebird

Denarius is one of the proliferating budget shoot 'em ups on the market at the moment. The action takes place in space, flying over vertically scrolling Uridium-like structures and collecting pods as you go. On the structures are high barriers that must be dodged, and a variety of aliens who will do their best to blow you up. Although very unoriginal, Denarius is very well programmed, with smooth interesting graphics and suitable sound effects. Some of the sprites and their movements are very smooth and the game is good fun to play. If you're on the look out for a shoot 'em up you can't go wrong with Denarius for only £1.99.

Value Rating: 8

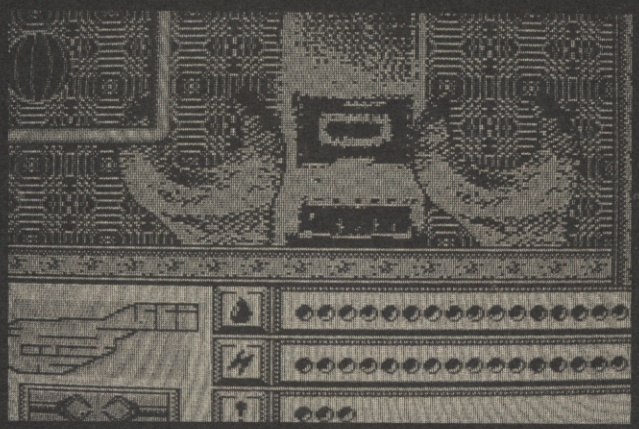


CAPTAIN KELLY — Bug-Byte

The aim of Captain Kelly is to regain control of a spaceship from a bunch of nasty robots (how original!). The spaceship is viewed from above and scrolls in four directions. As you walk about you come across robots that will shoot you. If you have enough bullets you can shoot them back. Extra ammo, energy and strength can be gained from various points in the ship. Captain Kelly must be one of the very few games that doesn't have on-screen scoring in the game apart from when you enter a computer terminal. The scrolling jerks and the whole game moves at a terribly slow pace.

An awful tune plays in the background and the graphics are plain and boring. Captain Kelly is a definite no-no!

Value Rating: 3



RASTERSCAN — Mastertronic

Rasterscan is a wierd sort of game. It claims to be an animated adventure without text which needs no arcade skills to play. This is as good a description as you could give, although a bit of joystick skill is handy when your spherical droid is bouncing all over the place. The idea of the game is to repair your spaceship before it drifts uncontrolled into a star. As you (a droid) have only been designed to fix toasters, mending a spaceship could prove rather tricky. In order to do this, you must repair the machinery and steer the ship back on course. As you float around the ship in zero gravity, you come across locks that needs to be opened by solving a puzzle consisting of eight coloured segments. Each segments must end up the same colour, and each lock is slightly different. Rasterscan doesn't look that impressive, and the music is simple, but if you don't give up too soon, it can be fairly enjoyable. Rasterscan is nothing outstanding, but worth a look.

Value Rating: 7

COLONY — Bulldog

The idea of Colony is to keep your colony from starvation and invasion from the aliens. You are a maintenance droid (that looks more like a ladybird) and must scurry about the colony, repairing fences, planting and harvesting crops, and killing the invading aliens. You must be careful not to harvest more than you plant or your colony will starve. In certain buildings around the colony are store rooms with extra fencing, and places to order supplies from Earth.

I found this game to be rather boring as nothing much seems to happen. One thing that annoyed me was not being able to travel in diagonals — just up, down, left and right. There is an awful tune with sound effects of similar quality. The graphics are dull and rather boring. I can't see Colony appealing to many, even ardent strategy fans.

Value Rating: 4

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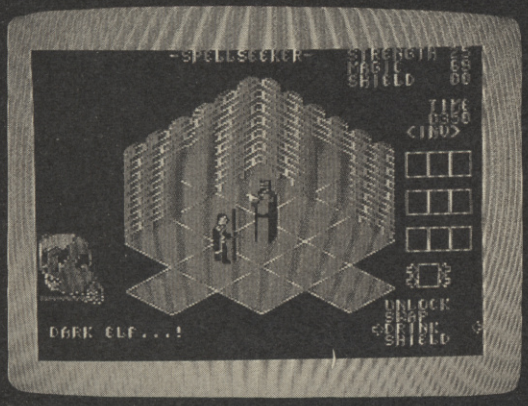

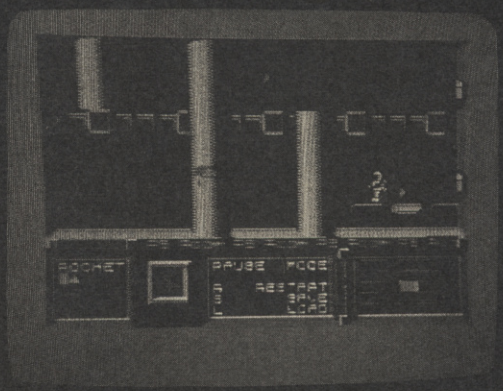

SPELLSEEKER — Bug-Byte

Spellseeker must be one of the worst Fairlight variants ever. In general this type of 3D arcade adventure has rooms that can be easily recognised and distinguished from one another by the objects they contain. As Spellseeker hardly has any objects, and the viewing angle changes when you re-enter a room, finding your way about is almost impossible. Each room looks nearly exactly the same as any other, being the same colours, with absolutely no features apart from the odd ogre or skeleton. The idea of the game is to find the crown held by the sorcerer by finding and casting various spells around the castle. The whole game is very boring to play, with dull repetitive graphics and a slow boring tune in the background. Yes, it's cheap, but that's no excuse for putting out such rubbish as this when you see what can be bought for the same price eg. Thunderbolt, Kikstart II. Leave well alone.

Value Rating: 3

ARMOURDILLO — CodeMasters

Set on the planet Mobanti, in this game you control the Armourdillo fighting machine, shuttling your fellow Mobantis to safety whilst fighting off the nasty Earthlings. Shooting the force field on the far left of the landscape releases a pod containing survivors. You must pick this up and take it across about six screens of scrolling landscape and drop it off at the other end. Each level has an increasing amount of pods that must be rescued before progressing to the next. There are nasty Earthling spaceships that fly about and sap your energy. Your multi-position gun comes in handy for blasting these.

Armourdillo looks and sounds very professional, but the game is far too simple to give much lasting interest. I found going back and forth over and over again pretty boring. One for the younger player perhaps who will certainly enjoy it.

Value Rating: 6

STRANGELOOP — Bug-Byte

Strangeloop was originally released some years ago as a full price game. It wasn't particularly good then, and looks even worse now. Set in a robot factory, Strangeloop is an arcade adventure — your task being to stop the aliens from using it to make weapons. It is made up of 250 screens of conveyor belts, acid baths, platforms and industrial waste. You control a spaceman who can run and jump about in his spacesuit. There is no oxygen in the factory apart from canisters that must be collected to prevent suffocation. The razor sharp industrial waste will puncture your suit and cause a rapid loss of oxygen. Patches can be found to remedy this. In one of the rooms is a jet cycle that lets you get about faster.

The colour schemes of the rooms are rather tasteless at times and they don't vary much. The single colour sprites are small and uninteresting with animation to match. There is hardly any sound in the game, and what there is, is pretty simple. Strangeloop gets boring after little play and isn't recommended unless you're after a jaunt back to 'the good ol' days'.

Value Rating: 4

THUNDERBOLT — CodeMasters

After the detonation of a time bomb in the 21st century, you have been pulled through time to the middle of a futuristic battle in the 21st century. Treating all aircraft as hostile, you must shoot your way through level after level of all manner of nasties in your early 20th century bi-plane. You start at the far left of each level and must make your way along a scrolling landscape riddled with nasties and barriers. The game is played like Uridium with these barriers and aliens and a runway at the end to land on. Although the design of the graphics and the colours used aren't that attractive, the multi-speed scrolling is smooth and very fast. The music and sound effects are nothing special but OK. Thunderbolt is definitely one of the better budget shoot 'em ups and is a very worthwhile buy. Recommended.

Value Rating: 8

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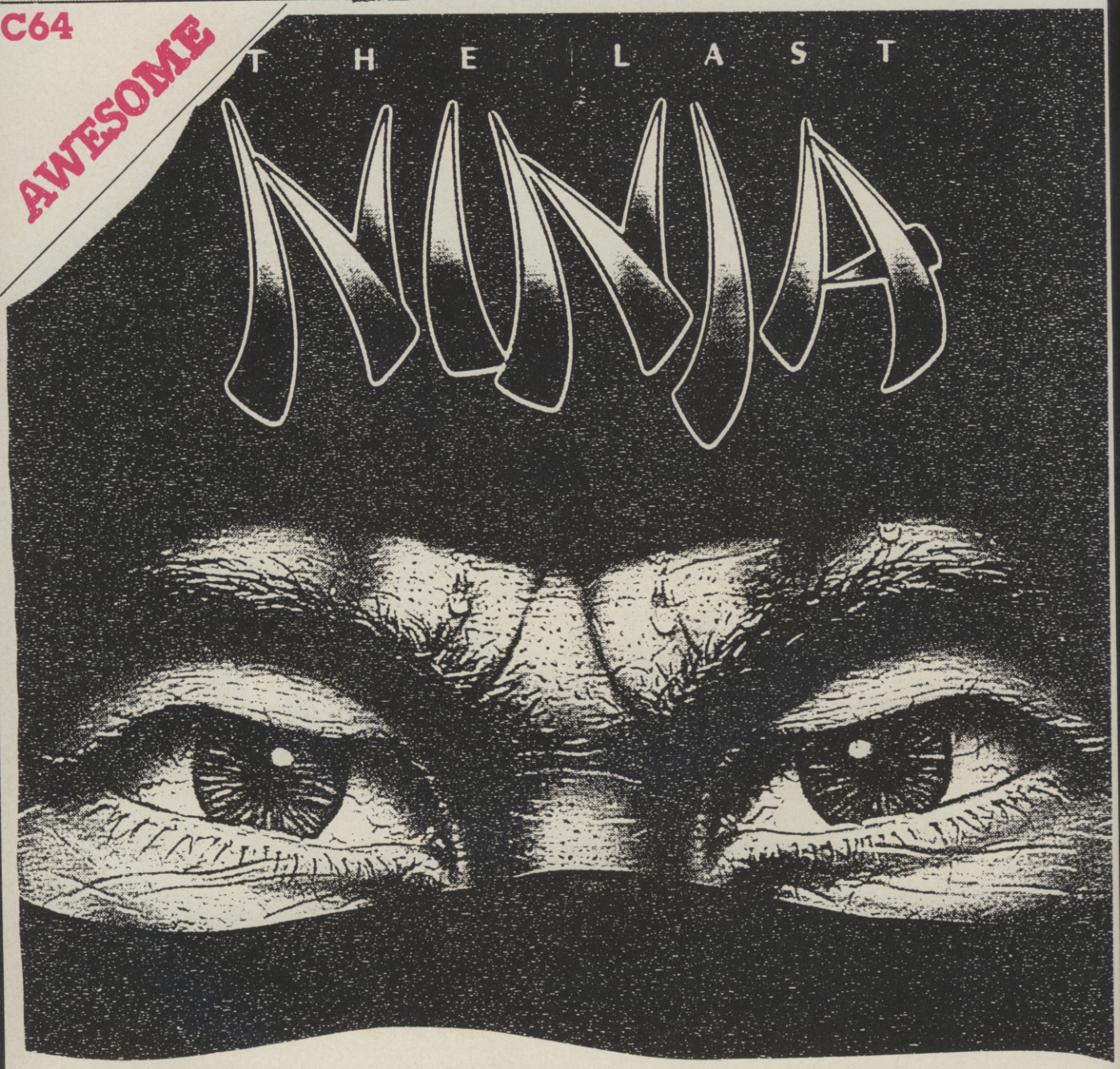
C64

AWESOME

THE LAST NINJA



Ninjas may come and ninjas may go, but to this day, and probably a long time to come, none have had so much time and effort spent on them as System 3's The Last Ninja. After so many unoriginal karate clones, it's a real pleasure to play such a different game as this. Where as Melbourne House took the theme of Exploding Fist and turned it into an arcade adventure by adding a lot of wandering around, System 3 have created a very classy arcade adventure and added a bit of hack and slash here and there.

The story goes like this . . . After two hundred years of Fujiwara Clan rule, the farmers and peasants decided they'd had enough and set up their own colony in the Tokakure mountains. After a few centuries, this colony known as the Ninjutsu, had become the most feared warriors of their time. Every decade, the Ninjutsu had to travel to the island of Lin Fen to pay homage to the White Ninja. Taking advantage of this, Kunitoki, the leader of their arch-enemies, summoned the spirits of the underworld who proceeded to kill the whole of the Ninjutsu. All apart from one who had to stay behind to hold the fort. It is now up to you, as the last ninja to travel to the island, find the scroll, and take your revenge on the evil shogun.

The Last Ninja is played over six levels that load separately. Each level must be completed by solving problems, finding weapons, using objects and beating up the guards.

You start the game in the wilderness. Most of the scenery here is made up of rocks, bushes, trees, river and swamps. A maze of paths lead around the wilderness, and the ninja cannot leave these apart from jumping across stepping stones to cross a swamp or river. As you explore you will find shrines with a larger than life statue of Buddha. Kneeling at one of these shrines will give you some help by telling you what to collect next. As you enter a location, any objects will glow for a second. These objects can be picked up by crouching and reaching out so your hand touches it. This can be rather fiddly at times. At the end of the

level is a dragon that creeps out of his cave and toasts you with his fiery breath if you attempt to pass him.

Level two is the wastelands which has similar scenery, and a small mountain range to cross. At the end of this level are two smaller stone dragons, the second of which will give you the flame grilling treatment again. This dragon must be dealt with in a different way to the first.

The third level is the palace gardens. In this level there are shrines and beautifully drawn, animated fountains which can give you some help. Wandering around the gardens you will see brilliantly coloured flowerbeds, and a rather prickly rose — ouch! There is a yellow statue that must be passed at the end of this level.

On completion of level three, you start outside the palace. As you run towards it you sink through the ground and finish up in the dungeons. Your object here is merely to find a way out. This is very hard as you find yourself going round in circles in the maze of paths. The graphics here are excellent, with severed heads, skeletons slumped against the wall, a torture chamber complete with a corpse on a rack, and ghosts that float about, waving their hands. As well as the usual samurai guards, there are skeletons that jump to life and attack you. I particularly like the ghost carrying his head under his arm and the rats that scurry about.

If you manage to escape the dungeons, you arrive at the outside of the palace once more. The first problem is how to get through the door and into the palace. Once inside, there are two more tricky problems to overcome before you get to the final level — the inner sanctum.

The graphics are on this and all the other levels, beautifully drawn and very colourful. You must now find the scroll to complete your quest.

Some may find The Last Ninja a little frustrating at first due to the slightly strange control method, but with practice, jumping rivers and beating up guards becomes easier.

There is some excellent music by Ben Daglish and Anthony Lees — one for each level, and another six pieces as the levels load. They really create an exciting atmosphere and drive you on.

The backgrounds are superbly drawn and very detailed, and the sprites are also very well designed and animated.

When playing The Last Ninja it is obvious that no part of it has come about without a great deal of time and effort. There seems to be just the right amount of detail and variety in the graphics, for example, to leave enough memory for a sufficient amount of locations and decent music. The multi-load that can really degrade tape based software at times, doesn't seem to matter as the game flows logically and the player is entertained with some suitable music which includes some original 'instruments'. Thankfully, The Last Ninja has lived up to my expectations, something games rarely do after such a long wait. System 3 who programmed this don't bring out many games but when they do — like International Karate — they have tremendous impact. Mark Kale has struck again with this one.

The Last Ninja has an excellent blend of beat 'em up and arcade adventure and is real value at £9.95.

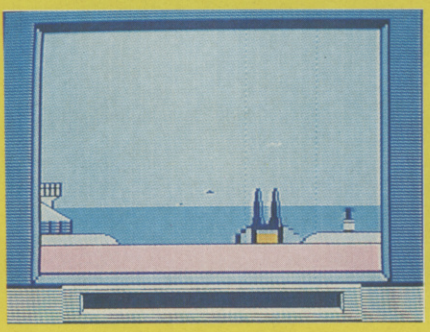
I have no hesitation in recommending this brilliant game to anyone, play it and you'll never forget it.

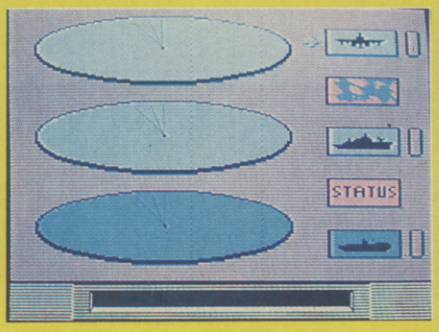
T.H.

Price: £9.95 (c) £14.95 (d)
Graphics: ★★★★★
Sound: ★★★★
Playability: ★★★★★
Rating: Awesome

C64

MEGA





Convoy Raider — Gremlin

War, as it says in another section of this CCI, is Hell. I think it was General Marshall of the US Army who said that (and if it wasn't no doubt one of you razor edge smart CCI readers will tell me). And, as recent British experience in the Falklands has shown, even today being on board ship when the enemy is throwing everything at you can be like being in a sardine can that has been dropped in a bonfire. Sometimes while playing Convoy Raider that was the feeling I got. For as the enemy planes, Exocet missiles, and other aggressors over and under the waves came at me, my status picture showed up on the screen as if my ship were progressively becoming more and more red-hot. Literally, as you get hit the ship gradually turns from black to red. A nasty sight.

The main reason for this burning feeling is that I was getting plastered with hits both from enemy bombs and especially the vicious Exocet missiles. What was I doing out there in the seaborne firing line? Well, Gremlin have decided to take Silent Service and Beachhead, shake the boring bits out of both and put you in command of a squadron patrolling at sea, protecting what looks like the whole of the free world from all sorts of attackers coming from the distant ocean (No, not the games house!)

The reason I say Silent Service is that the graphics, as in that simulation, are excellent with very accurate looking maps and charts and radar style screens that give the game the proper feel of a simulation — which says a great deal for its sense of reality. The Beachhead element is the fact that it is really an arcade game and one that would take billions of ten pences, quarters or francs around the world if you could play it on an arcade machine. It has that big machine feel as you aim your guns and pour out shells at the incomng planes or rockets.

Convoy Raider isn't an easy game. You have to be very quick to deal with the Exocet missiles especially. It is essential to go for them before they turn and home in on you. If you haven't got them by then they're going to thunk into your ship's side. To blast other ships with your own missiles you must get them exact centre in a small icon like radar screen. You have 30 seconds in which to track down each ship and blow it out of the water. But you have to watch out because there are decoy ships too to put you off the track of the real ones.

There is also helicopter bombing which takes lots of shots and even more patience. You can also set your speed, headng and see your status from a separate screen which shows you your score and the damage level affecting your ship. There are also repair ships that move around, and, if you can find them, patch up your ship's damaged areas.

Convoy Raider is a game that is not so obviously spectacular as some coming out these days. But anyone who plays it will immediately realise that it totally keeps up the high standard that Gremlin now is known for. It has very clear and well designed graphics that give it a very high sense of "you are there". The shooting actions require a substantial level of skill which needs to be honed through play. There isn't much sound except for sound effects but then it doesn't much need it. You will have enjoyed this kind of game more often on an arcade machine than a home micro. That is a recommendation in itself. It also has just the right level of challenge and difficulty. I don't know whether Convoy Raider will sell millions but it certainly deserves to. Highly recommended.

Graphics: ★★★★
Sound: ★★
Playability: ★★★★★
Rating: Mega
Price: £9.95

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IFFY

Deceptor — US Gold

A favourite topic of game designers seems to be those robots which change their form from say a man-like robot to a plane. So far there has been two Transformers games, and recently, Challenge of the Robots. Now, there's Deceptor from US Gold which doesn't feature any real life toys, but follows the trend with a craft that can transform from a ground-based vehicle to a plane, and to a humanoid. Taking full advantage of your three forms, it's up to you as Deceptor to negotiate the many corridors your Elders have compelled you to travel.

Each of these corridors scroll from the right and are viewed from the side with a 3D slant. Along the way you have to negotiate platforms and ramps with nasty drips and aliens dotted about. On these platforms are ammo units that need to be collected to use in your gun and give you extra time.

Starting in the ground vehicle form you can travel up ramps and onto platforms. Pressing the fire button changes you to an airborne craft and allows more freedom. As you metamorphosise you see a close-up view of the change which is impressive the first time, but can fortunately be disabled as it does get rather boring after a while. At the end of each level is a guardian that must be shot a number of times before you can advance to the next.

On the whole, the graphics are fairly simple and unimaginative,but at the end of the corridor they change for the better with interesting, well drawn guardians.

Coming from US Gold, Deceptor had to be a multi-load. The first load gives options on responsiveness, acceleration, sound filter settings etc. and has a short title sequence of cartoon style pictures and speech bubbles. This is all fairly entertaining the first time, but like the transformation sequence, it does lose its appeal very quickly. Once you get to play the game there's a break from the loading for a minute or two until the level is completed when you have to wait for the next to load.

In my view, cassette multi-loads are acceptable as long as they are really necessary and either load a substantial amount, such as World Games, or allow more levels or screens without a long wait such as Super Cycle. Deceptor's loading system is not well designed — its most annoying feature being that the whole game must be re-loaded when you die. The sound effects and music in the game are better than the run of the mill sounds you might expect and full credit must be given in this area.

Deceptor can be good fun at times, but is, in our view, spoilt by its multi-load. Take a look if you're interested, but don't expect too much.

T.H.

Price: £9.95 (c) £14.95 (d)
Graphics: ★★★
Sound: ★★★★
Playability: ★★★
Rating: Iffy

NAFF

Dead Ringer — Reaktor

Dead Ringer is one of those games you play once or twice when you first get it, then demote it to your darkest, dustiest corner, never to be played again.

The game is played on a doughnut shaped ring in space. The idea is to stay alive until the time limit reaches zero. The ring is viewed in 3D from the cockpit of your skimmer. On the ring there are mines, walls, force fields and warp gates to be shot or avoided. Your skimmer can go over one of four lanes on the ring: inside edge, outside edge, and the two sides. When on the inside edge, you can see the obstacles coming from a long way off, but on the sides you can't see as far, and when on the outside edge, you get hardly any warning, although there are three scanners which give you more of a chance.

There's not much feel of going anywhere as the ring is just plain blue and the starfield hardly helps.

The title screen has a pathetic attempt at some bouncy letters which crawl up and down in no particular sequence.

Music and sound effects aren't too bad, but don't do anything to make the game worthwhile.

Dead Ringer sells for £4.99, but even at that price it couldn't be recommended.

T.H.

Price: £4.99 (c)
Graphics: ★★
Sound: ★★
Playability: ★
Rating: Naff

IFFY

Hades Nebula — Nexus

It seems to me that scrolling shoot 'em ups all follow the same pattern now — starting off with a slow ship with little fire power, and collecting attachments as you go. For example, take Nemesis, Delta, Slap Fight and Tiger Mission all have this feature. If the game is fast and well written, it can work very well, but unfortunately Hades Nebula (which also uses this concept) is neither fast nor particularly addictive. It appears to be an amalgamation of just about every existing shoot 'em up, with a three plane starfield on the title screen, Terra Cresta and Uridium style backgrounds and the weapons system of plenty of other well-known arcade games.

The game starts with your ship moving at a frustratingly slow speed over an equally slow scrolling background. Aliens swoop in from the top of the screen in similar fashion to Delta, but not half a smoothly. At certain points, shooting ground emplacements will send an add-on for your ship floating down the screen. Collect this to gain extra speed or firepower.

Graphically, Hades Nebula is OK with smooth, if slow, scrolling background which are competently drawn, but quite unoriginal. The aliens aren't particularly well drawn or very imaginative.

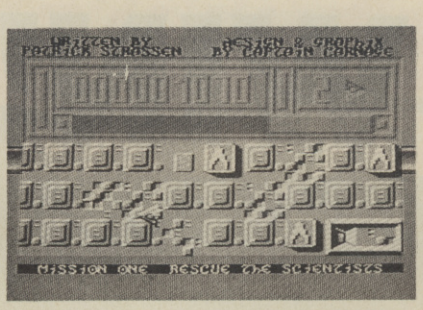
There is a choice between music or sound effects, both of which are quite forgettable. For the idea of adding arms as you go to work, a decent speed and firepower must be built up early in the game. Hades Nebula does not do this.

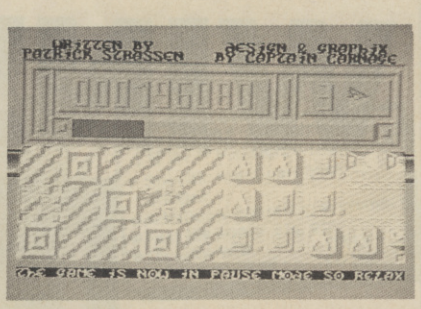
Hades Nebula is mildly enjoyable but just doesn't have anything new or exciting to hold your interest for long, and is rather over-priced for what you get.

T.H.

Price: £9.95
Graphics: ★★
Sound: ★★★
Playability: ★★★
Rating: Iffy

C64
C16
MEGA





Eagle Empire and Guardian — Budgie

Budgie have re-released two old classics here in budget form and they show just how good some of those old games were. Maybe the graphics and sound aren't what games are today, and maybe the scrolling isn't as smooth as, say, Uridium but what they lack in frills, they make up in game play and simple, pure old addictiveness.

Eagle Empire is on side A, It's an old Phoenix game — the kind you'd come across in an arcade shop that still has Pole Position in pride of place, or whose most recent game is Star Wars.

You must blast your way through a few levels of aliens and then through a mothership to destroy the master aliens. It may sound easy, but once you've completed it the first time, the pace hots up! The graphics are crude — sound poor, but this is an excellent game that is way ahead of its time.

Guardian is "An amazing and fast moving space spectacular in the classic mould" say Budgie and I couldn't have described it better myself! You fly along horizontally — Defender style and blast everything in sight. It's all there — pods, mutators, landers, bombers and others. No need to spend any more money on Defender!

It scrolls like a dream — for an old game and contains all the frenzied action of the proper Defender — swooping over mountains, sending out streams of laser fire, and doubling back to get 'those two' you just missed. This budget compilation is excellent — I almost gave it awesome but they *do* show their age in the graphics department.

Nevertheless these two games should make their way to everyone's shelf.

Price: £1.99
Graphics: ★★★
Sound: ★★
Playability: ★★★★
Rating: Mega

Gwnn — Mastertronic

Gwnn is the first game Mastertronic have released for ages on the C16. It really looks as if the market is dying now doesn't it? And I can see why — when the only games people seem to buy, are budget games. No matter how much a game is raved about by the reviewers, it doesn't chart, and if it does, it soon gets swamped out by budget games again. The only full priced games that get anywhere are the naff ones like Konami Coin-op Hits and Paperboy, I suppose I should have warned you about them earlier so other Commodore mags and I are both to blame.

What has all this 'soap box' talk got to do with Gwnn? Well, I reckon that after the market had been swamped with budget software people began to see that not all of it was good, and when they wanted to get back to good software, they found that companies had stopped making it — finding that making games wasn't profitable. Now, even Mastertronic are finding it hard to sell C16 games so even they it seem are phasing out their sale of C16 games.

Gwnn is a mixture of shoot 'em up and strategy — not much strategy admittedly, but just a little thinking is needed to play this game. The game involves you flying over alien bases doing a series of missions.

The first of these missions is to rescue the scientists trapped by the aliens. This is fairly easy and just involves you flying over the surface of the ship picking up "S's" along the way. The next mission is to destroy the generator. This one is a little more difficult, because your route is blocked by laser bolts which drain your energy murderously.

You must then pick up an auto fire — to enable you to shoot with more ease — for some reason I found that I couldn't find the autofire anywhere, but I still got to the next level where you have to destroy the ammo dump.

There are two more stages after that, stage five, where you must fuel up, and stage six where you must destroy the alien home base.

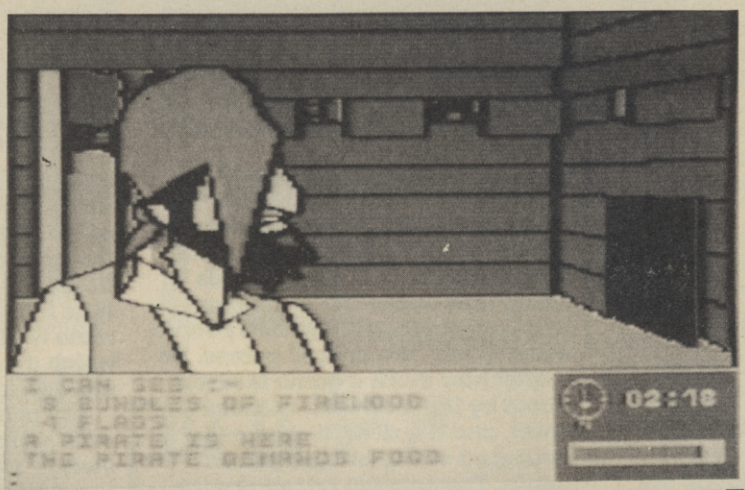
The scrolling is fast and super-smooth, the graphics are excellent, though some things are a little hard to make out, and the sound is loud and wacky, with some interesting fx. I'd say this was a cross between Liberator and Battlestar, containing elements of both, and turning it into a thinking man's shoot 'em up.

What I'm dying to know is why Mastertronic called it Gwnn!

C.K.

Price: £1.99
Graphics: ★★★★
Sound: ★★★
Playability: ★★★
Rating: Mega

WIN! WIN! WIN!



HEAVE HO! OR I'LL KEEL HAUL YE!

Yo-Ho Me Hearties! Avast there ye landlubbers! — and other suitable nautical expressions... Is it treasure ye seek, Jim Hawkins? Don't tell me your name isn't Jim Hawkins! You must have sailed into the wrong story. But wait, my young matey, me name isn't Long John Silver for nothing... I have treasure indeed for you if you're a bit of an adventurer. You are? Excellent. Well, there is a kind benefactor called Mastertronic who is so rich — have you noticed that every sixth game sold in the Universe is a Mastertronic game! Like every fourth child born in the world is Chinese... Well, this mysterious Mastertronic has pressed on us 50 copies of their Treasure Island game that Cap'n Andy Moss — Master Adventurer — thought so terrific. They want us to award them to 50 of the sharpest little treasure hunters among the CCI readers. All you have to do to win one of these amazing seaworthy games is:

1. **Tell us who gave the horrible Black Spot in the book "Treasure Island"?**
2. **Tell us who wrote the book "Treasure Island"?**
3. **Tell us what were doubloons and pieces of eight?**
4. **Who — or what — used to say "Pieces of Eight"?**
5. **And what's wrong with me leg, ye little weevil eater?**

Answers on a postcard, please to Treasure Island Competition c/o CCI, 40 Bowling Green Lane, London EC1R 0NE and they must reach us by October 15th 1987 or I'll see you walk the plank!

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COMMENT

Greetings once again from Middle Earth. A recent report from America has shown up some very interesting facts about your typical American computer consumer. It seems that the average age of a user is around 35, and that the biggest selling games are simulations and adventures, with strategy a close second. As far as arcade shoot 'em ups are concerned, well, they don't even warrant a mention! Also, practically all the home computers in the States are disk driven beasts that demand huge memory games to operate. Now for an advanture lover like me, this is very heartening news which comes at a very timely moment for us over this side of the pond, as one or two of our premier adventures houses are planning an assault on the American market, and nothing would give me greater pleasure than to see them right up there with the Infocoms and the Mindscapes. Considering the Americans have been computer adventuring for many years a round of applause must go to Magnetic Scrolls and Level 9 whose software achievements have had even the great Infocom looking with envy. Good luck over there my friends.

I hope you enjoyed the hints last month, there must have been something there for everyone. This month has a decidedly gothic look to it as I take a look at Frankenstein, Brimstone, and Temple of Terror to name but three, and also Stifflip (previewed a couple of mags back). Don't forget that if you have written an Adventure, send it in to me and I'll tell the rest of the world about it. Happy adventuring.

FANTASY ADVENTURE GAME ON TELEVISION

Anglia TV in the UK has announced that it is to launch a programme series of eight parts called KNIGHTMARE, which is a rôle playing adventure game with puzzles, special effects and plenty of monster bashing. The contestants will be between 13 and 16 who team up in parties of four to try and outwit the Dungeon Master. The action takes place in a multi-chambered electronic dungeon ranging in appearance from conventional rooms to huge underground caverns. The effect is created by use of sophisticated colour separation overlay (how's that for technical jargon?) and makes use of a 24 bit Spaceward Supernova computer, that holds scenes in its memory and can be called up instantly on the producers sayso. This gives the show an ever changing dungeon that will prove very difficult for the players to escape from. If a team does complete a game, they will return another week to play at a "higher" level. As you can see from the pic, it all looks rather interesting, and Anglia have promised your hero (me) that he can go down and take a look at the whole caboodle. This I will do and bring you a full report.

Adventu

ARIOLASOFT GO FRANKIE

It's all gothic this month, as Ariolasoft announce a game called the BRIDE OF FRANKENSTEIN on their 39 Steps label. You play Frankies bride to be, and must find the necessary items for his healthy existence (liver, brains, heart, lungs etc). 60 rooms to search, and seven different keys to find, it all sounds too horrible to contemplate.

DUNGEON SLIME NEVER LOOKED SO GOOD

So says the press release on the new role player from Electronic Arts entitled LEGACY OF THE ANCIENTS. This puts you into the world of Tarmalon, where you embark on a noble quest to retrieve the lost "wizards compendium", a leather scroll with evil powers. 12 different towns, deep forests, mysterious castles and dank dungeons with all manner of beasties await you. The game has state of the art graphics and sound fx that make you "feel as though you are really in that swamp or deserted hall". Like the saying goes . . . we wait and see.

ADVENTURE PROBE KEEPS UP THE GOOD WORK

Sandra Sharky, the noise behind Adventure Probe, keeps me in touch each month with a copy, and it's nice to see that demand is growing. Sandra tells me that the number of Commodore adventurers on her books is growing since I pointed out her address. So if anyone out there wants to contact Sandra for a copy, write to her at 78 Merton Road, Wigan WN3 6AT.

ADVENTURE CLUB AWARDS

News has been brought to me of the Adventure Club's Golden Chalice Awards of 1986 which are, in reverse order; The Very Big Cave Adventure (bronze) Kayleth (silver) and the winner of the golden chalice The Price Of Magik from Level 9. Personally I don't agree with them, but then again I'm not a member. What do you think?

LETTERS

Dear Andy
I have just about given up hope of finding someone who can help me, so please can you help? I've been playing Lord Of The Rings and doing well, until now, you see when I follow Strider back past Bree three Black Riders attack us. The elf stones are supposed to help but I don't know how to use them. Please tell me quickly. Thank you.
Stephen Vorga, Worthing

The Elf stones can only become magical if you have spoken to Radagast. He is in the Blue Mountains' observatory. Once you have done that you can throw the stones.

Dear Andy,
I am stuck in Ultima IV. Could you please tell me the answer to the "last question". So far I have made only 62500 moves is this a record? Also could you give me the English address of SSI and Electronic Arts for your fellow Brits living abroad. Keep up the good work.
John Graham, W. Germany

Ultima is one of my favourite role playing games, and the sequel should be with us soon. As far as your problem is concerned the answer is TRUTH and HUMILITY. Your score could well be a record, has any one else done better? You can contact Gerry Howells at US Gold for any SSI info, Unit 2/3 Holford Way, Holford, Birmingham B6 7AX. Electronic Arts haven't officially opened in London yet so I can't really give you their address.

Dear Andy
I recently decided to buy a C64 and am very happy with it. Playing adventures is what really made me do it, but here is my problem. Most adventure games and columns in magazines are geared to experienced adventurers, but what about us just starting? How about printing a list of ten adventures number 1 being very easy, to number ten being the most complex? This would help novices pick the right game to buy instead of getting stuck with a real killer straight away. Keep up the good work, and I think CCI is the best of the bunch.
Stuart Swinscow, London

I happen to think Stuart that that is a very good idea, well done. The only problem I see is that some novices would like to get a really tough one. Imagine the feeling of beating a toughie and keeping your sanity! Tell you what, I'll see if I can do something on those lines next issue.

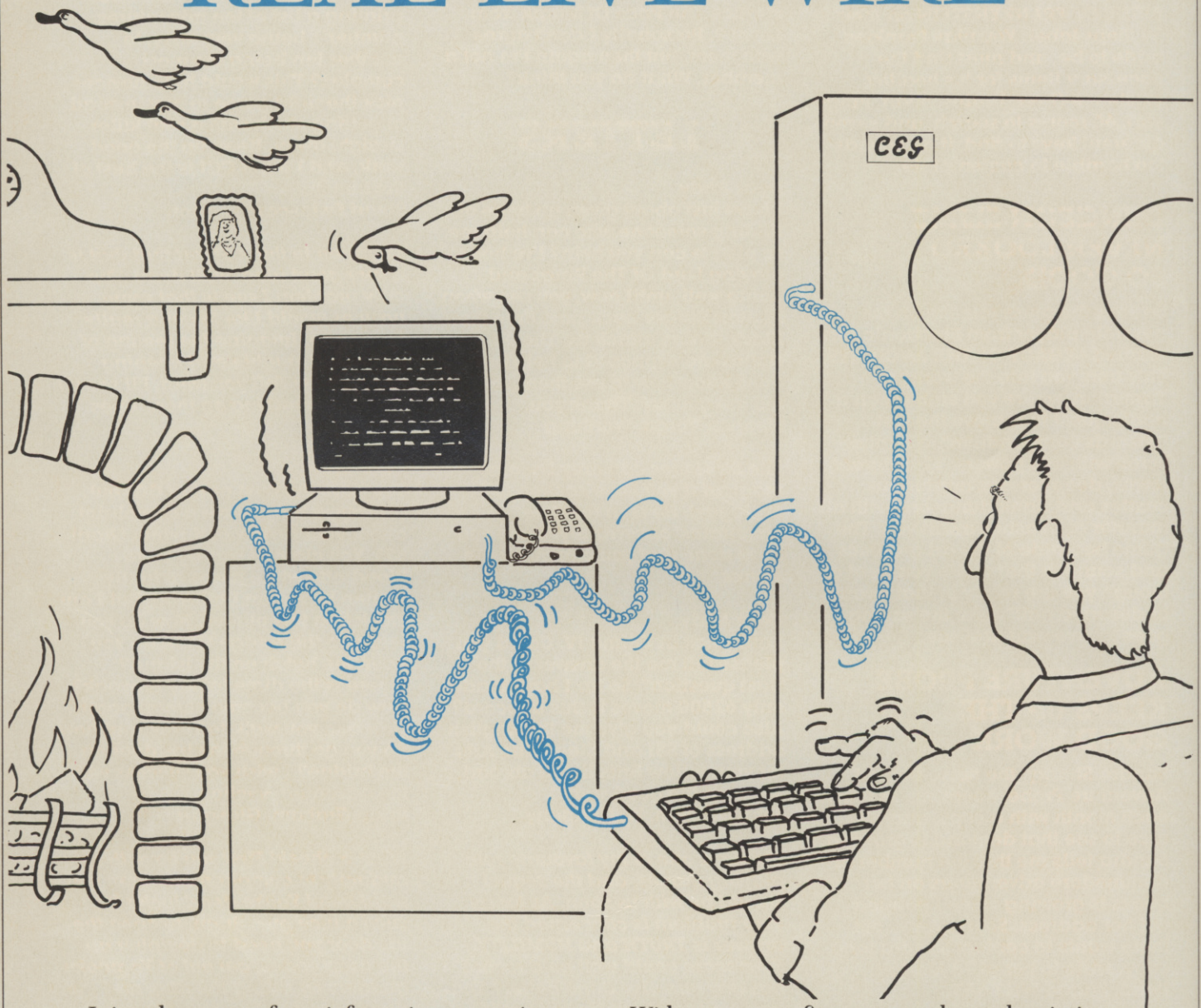
Dear Andy,
You have the best part in CCI but (always a but) I have a complaint about your review of Kayleth (April 87). You claim it was by Mike Woodroffe while it was actually written by Stefan Ufnowski. But I am stuck in a few places. How do you return to the bridge? How do you open the hatch on the island? Where is the dime to pay Broznak? How do you become human again? How can you walk to Yurek and how do you go through the iris door on the bridge? I wish you success with the adventure section.
Brian Graham, Glasgow

What a cheek! First you have the audacity to complain and then you want help! You're dead lucky I'm such a nice guy, Brian. to open the iris door you need to decipher all the azap codes, get out of Yagmoks quarters by riding the ring, and the dime is gotten by using the azap code ELY. You can't become human again because you are an android anyway! That's all you're getting, so there!

Dear Andy,
I am an avid reader of your column and have seen the bit about you wanting a copy of any adventures, so here is a copy of one I have written called THE BODY. Let me know what you think.
P. R. Lamonby, Yorkshire

Thanks for the disk Mr Lamonby. It arrived too late for this month so I will take a close look at it next month, so watch this space. Anyone else out there want to have a go?

COME HOME TO A REAL LIVE WIRE



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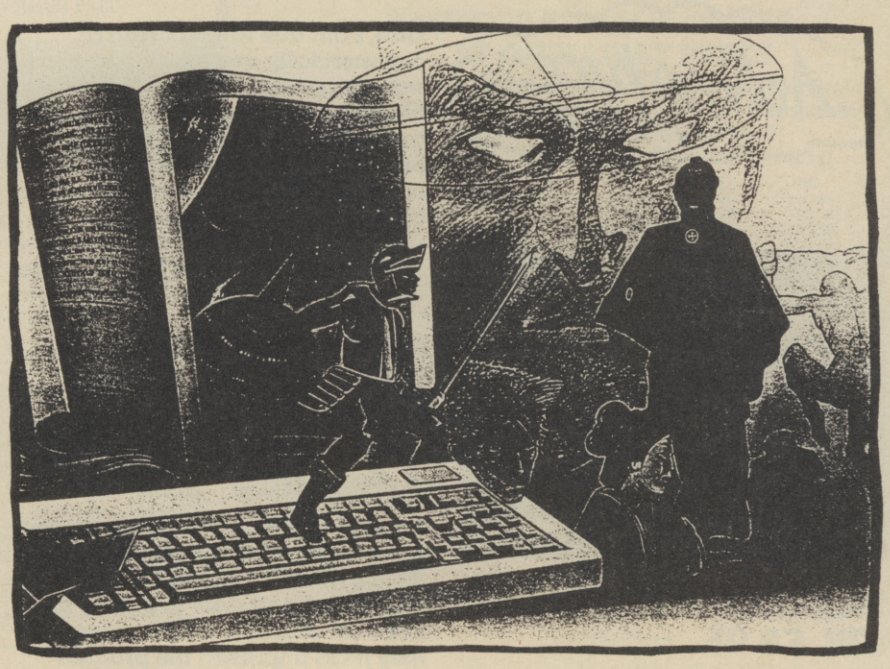
Adventure... CONTINUED

ADVENTURE REVIEWS



STIFFLIP AND CO.
Palace £9.95

A game called Redhawk really took to me and I found myself playing it for many an hour. The new way in which the strip cartoon graphics were presented and the overall game plan were in my view quite original, and I remember thinking at the time, this adventure will really sell well, in point of fact, it sold quite a few, and for that reason I was surprised that no one else tried to follow that design. A couple of issues back I previewed Stifflip, after a trip to Palace Software to look at the game, and there it was, my elusive Redhawk style adventure but tarted up with some neat routines and icon driven to boot.

Now the finished version has arrived, and the report is a good one, dear readers. Viscount Stifflip is alive and well and together with his merry band of adventurers, Colonel Argie Bargii, Prof Braindeath and Palymra Primbottom is trying to put the evil Count Chameleon behind bars where he so rightfully belongs.

The game as mentioned is icon driven, and you can become any of the four heroes by selecting the "change batter" icon (references to cricket are many as the evil Counts rubbertronic ray will change the consistency of a cricket ball, which isn't cricket is it? Because a googly just wouldn't google anymore). You will need to disperse all the characters around the sixty plus locations in order to retrieve certain key items that only certain characters can use. The puzzles are tough but logical, but the fight sequence is not for me. An arcade style routine here involves a gloved fist swinging around and around, and by centring the target icon on it and pressing fire will determine the force and accuracy of the blow. The only real let down in an otherwise entertaining romp.

PERSONAL RATING 7

BRIMSTONE
US Gold £19.99

This is the first electronic novel, text only, but with the addition of a hard back book to accompany it, which depicts the characters in the story and gives general background info on the story.

Brimstone, is very classily coded, and bears striking similarities to, (dare I say it? Yes, damn it I will) Infocom's style' long descriptive passages, and very humorous interchanges with the characters. The story is in fact a dream by Sir Gawain, one of the Knights of Arthur's Round Table, who thinks he has found, in a castle, the gateway to Hell, and tries to escape within one night (or is it knight). It is formed into chapters, and as you progress through the adventure different leads will present themselves to get you to the next chapter. So another time you play it, a different passage will lead to a different event etc. That is the first novel difference, the second, is a quick resumé of what you have achieved so far, a sort of "what happened in last weeks episode" type affair, which lets you know how you are doing in relation to finishing the game.

There are in fact two parts to this story, the first is actually getting to the gateway, which is pretty tricky, and the second is in Hell itself, where your troubles really start.

The adventure is in fact very user friendly and tries hard to let you know what to do if you're stuck. A case in point, I was stuck fast inside a block of ice, (how that happened is another story) could not move a muscle, arm, foot or head. After a few goes, a line came up "you hear the word Summer in your mind", this was a clue, and thankfully I began to get on the right track. Just by thinking of another word that summer involves gets you free eventually, and this type of gentle hint runs right through the game, which makes it one of the first of its kind to actually react to your situation, without a prompt of "help". The whole game is very atmospheric, with long descriptive text passages, that pull you directly into the story. There are in fact 4 titles to the range, each unique in storyline and the books are beautifully turned out.

The only thing I can moan about is the longish response wait to each command, but that is something with which all Commodore owners are familiar. I cannot rate these games high enough, an essential purchase for a true adventure lover.

PERSONAL RATING 10

Adventure!

Adventure... CONTINUED

FRANKENSTEIN
CRL £8.95

Rod Pike really does seem to enjoy a good horror story doesn't he? His first game, PILGRIM was full of descriptive text about slashing off limbs and hacking and slaying, the next was of course DRACULA and we all know what the censor thought of that, and lo and behold along comes FRANKENSTEIN with more of the same. I'm not complaining though as I think Rod has a very eloquent style, that really describes the scenes in about the best way possible. His sense of atmosphere is first class, and rather than let you wallow in it, he always hits you with a problem straight away. This is a trait that is in evidence in all of his releases so far, and in Frankenstein the problem is very simple — how to get out of the room you start in before a bolt of lightning comes down and destroys it. You actually only get 4 moves before your world comes crashing down, so hurry up! There is also a very important item hidden there too so you have to search a bit as well. How's that for a start?

A mere 5 locations later, you have another deadly problem, how to survive a rather nasty encounter with a bear. Coming so soon after the room problem really tests your staying power, but persevere, it'll be worth it. There are some very tasty graphics (the reason for the 15 certificate) along with some even tastier sound fx to go with them so playing the game with all the lights out is well worthwhile.

It's not all good news though, as the vocabulary is rather limited and the text display a bit on the boring side, both due to Rod using a commercially available adventure writing system, that proves that although these systems can really do the business when they're used properly, they can't beat a well coded original parser system from an experienced programmer.

That apart, this is a first class adventure that should be bought for the class of scripting alone.

PERSONAL RATING 8

TEMPLE OF TERROR
Adventure Soft £9.95

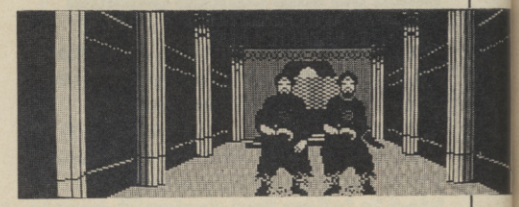
Adventuresoft got a bit of a caning from me with their last release KAYLETH which I found quite distasteful and a lot of money for not a lot of game. This time around they have improved the product enormously, and produced an adventure that really does seem to compare well with Livingstone's original Fighting Fantasy book, from which this adventure has been borrowed.

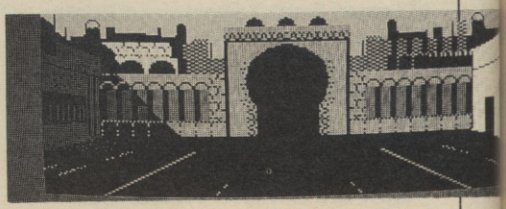
The response time is instant (well almost), and the graphics are quite well done, as you can see. The interesting thing about Temple of Terror, is that it is a game of two sides. One side of the tape is text and graphics, whilst side two, is an extended text only version, thereby satisfying both types of adventure players. Well done for that, boys! The other bit of good news is that they seem to have dispensed with that awful Scott Adams style of play. A good example is on the EXAMINE command which before came up "I've found something" if indeed you had without actually saying what you found until you LOOKed again. All very time consuming and all very wrong I'm afraid, so again well done for that too.

The plot is all about the quest by you to find five artefacts before the wicked Malbordus does, which will stop him gaining the sort of power that will give him complete control of Allansia. Now this may seem like your common or garden variety adventure yarn and it is, but there are some mean traps and puzzles to complement the time honoured storyline, that puts this game a peg up on the others.

There are some useful facilities built in too, like the BOM command, which when envoked upon an unexpected demise will transport you back one move to give you another chance to beat the trap (hopefully). The only real gripe is that the screen layout can look a bit cluttered at times, with bits of text scrolling at the top of the page and across the bottom, where the screen is split into an action and description area. At times quite confusing, room for improvement there please. With over 95 locations it's fair game though and one to keep you at it for many an hour I promise.

PERSONAL RATING 8





Adventure!

My top ten adventures must have gone down well as no one disagreed with me. It just goes to show you what good taste you've got. Looking forward to the PCW show this year, it looks as though we might be able to set up an Adventure help source on the stand. I will be there to meet you and chat about things in general, and give as many tips as possible, but more on that next month. If anyone would like to be included in a HELP SECTION to give a hand to other adventurers, send me your name, address and phone number (only if you want calls) and a list of all the adventures you've solved, and we will include you in the list. See you next month, happy adventuring.

A.M.

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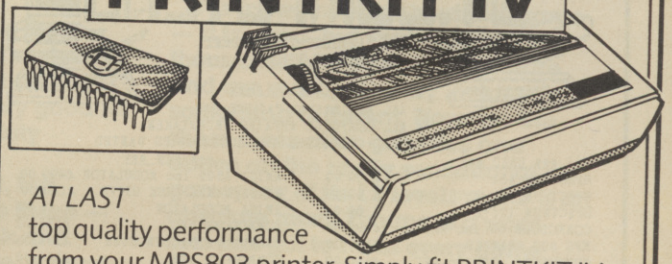

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C64

MEGA

Zynaps — Hewson

I must admit that when I first saw the advert for this game, I thought, "Oh no, not another shoot 'em up — that's all Hewson can make nowadays". But now I must take back that statement, because Hewson have come up with another winner — just as they did with Uridium.

There isn't much of a storyline attached to this game — you only need to know that you're in a Scorpion Attack Fighter, which has escaped from an alien space station. You must fight your way through 12 levels of aliens to find the alien stronghold, where you can begin the final conflict. Sound familiar? Yes, I bet it does, just like a thousand other storylines, but who cares anyway? I mean you don't need to read it once the reviewers have explained it to you!

Fighting is done with your ship, scrolling horizontally through ever changing scenery and aliens. There is the obligatory large ship, at the end of every level, and as with all of the new breed shoot 'em ups, you can gain extra firepower and other enhancements.

As I said a few seconds — I mean words — ago you can add things to your ship to make it meaner and more powerful. This is done — as in Nemesis — by picking up icons, only this time what you pick up is fuel. You shoot a whole group of ships and pick up the fuel they leave behind, when you have enough fuel pods for the weapon you want, you keep your finger on the fire-button and pick up one extra fuel pod — and hey presto — you're lookin' cool, feelin' mean and cuttin' thru' those aliens like a knife through soft butter!

These are the weapons at your disposal: 1 *Propulsion:* Extra speed is essential if you're to survive very long, so you can have a choice of four different speeds, from low power, to high speed, when the going gets tough.

2, *Lasers:* Also with four power settings these pulse lasers are perfect for feeding aliens.

3, *Plasma bombs:* These things are great for getting rid of ground installations. They are very powerful and even help you in killing aliens who get too close.

4, *Homing missiles:* Fire these things and you've almost certain to get your target as it won't rest until it has hit something — very good for destroying those heavy duty armoured ships.

5, *Seeker missiles:* Last, but definitely not least, come these — the ultimate. The will seek and destroy anything possible. A must on the later levels.

To test your powerful armoury of weapons in various colours, shapes and sizes, most of which are excellently drawn and animated. One scene with spinning meteors, is particularly good and provides an excellent space background. One quibble on this part of things is that lots of the sprites are not aminated at all (especially the heavy duty, supa dupa, whopper Organ ships at the end of each level) and this spoils the effect that your ship produces as it banks left and right.

There are also some terrific 'electrical' type sounding effects which are produces as you get killed. Music is also of a high standard, but it only plays on the title screen.

I'm in two minds about this game — it is good, but you've seen thousands of games like it before and are most probably looking for something different. However the sheer class of its graphics and above all the really sensational gameplay of its 12 levels make it an absolute must. Zynaps is a word that has got to be in every game players language.

C.K.

Graphics: ★★★★★
Sound: ★★★
Playability: ★★★★★
Rating: Mega
Price: £8.95 (c) £12.95 (d)

C64

AWESOME

STREET SPORTS Baseball

Street Sports — Baseball

You can read in another section of this CCI how Epyx are linking up even more closely with US Gold. They've both got terrific and deserved reputations especially for the "Games" series — Winter, Summer and World. The idea of a series of instead of just one game on one subject didn't need a genius to work out but, as they said about 007, "Nobody does it better." Now Epyx are introducing another series and if Baseball is anything to go by, it's going to be as big a smash, if not bigger, than the Epyx "games" predeces or. "Street Sports" is written, in the USA, by Andrew Spencer a UK programmer, who is working in the States, and must be considered one of the geniuses of our time on the 64. In Street Sports I can confidently predict, he is creating a legend — and you can say he is doing it right at the end of the 64's long and very distinguished career as the top home micro around the world.

Epyx — or rather their now exclusive European distributor US Gold (thank you, Helen Browne!) gave CCI the first look at Street Sports, just before CCI went to the printers. Surly and looking as if they'd just been dragged through a hedge backwards, they slouched in. No game is worth getting up on a Saturday for, you could see was moaning through their minds. But they stiffened when the disk drive whirred like old warhorses at the smell of gunsmoke ana when Baseball came up on the screen and they started to argue over teams and strikes, and suddenly they really came to li e. They stayed at CCI towers virtually the whole day and had to be thrown out physically before they would leave this magnetic game. They went down down the corridor and in the lift still rowing and promising various revenges against each other on Monday. Why did these blasé games reviewers get so wound up in a game none of them had ever even seen for real?

Because Street Sports Baseball is simply one of the most terrific "game" games you will ever play on the 64.

And the best part about it is that you don't have to know anything about Baseball to enjoy it. Furthermore it introduces you to a whole gang of kids who are going to become very familiar to you indeed, 16 of them and they hang around the streets and play. That's what the series is about 16 kids, all of them with different characteristics whom you can pick for your team and all of whom you will get to know like friends in real life. Or enemies in real life too maybe.

You start by being given a whole picture of the 16 kids — girls and

boys. You can either pick the ones you want — or you can leave it to the computer to do a random selection, which of course makes it much quicker but less interesting. You can play the game either alone against the computer or as the control neatly shows it — Human — against a life opponent. In your team choosing options you've also got 'Old'. That means you can load a previously chosen team. So you can keep your favourites together if you want. Then you get to choose the fielding and batting orders, making any variations you want.

Why all this about options? Because if you think about it, they are one of the keys to this game. 16 possible players; two different baseball fields — with different characteristics too; different batting order and fielding positions — and your own skills. Add those combinations together and you have millions of different possibilities, maybe even billions of different games and results. It's mind boggling — but it is at a really human dimension because you can identify with the kids and their varied good and bad points — which you have to consider when picking your team and playing this enormous game.

The game itself is just what it sounds. Baseball played not in some simulated huge stadium but in the cramped conditions of the street — or at least in a neighbourhood field.

You get a split screen view of the action — on the left, a close-up of the play and on the right a bird's eye view of the whole field, so you can keep an eye on the big picture.

You control the batter and each pitch could be slow, fast, an inside or outside curve or a bit of everything. If there's another runner on the next base, if you've made a hit, he — or she — will automatically run.

For pitching you can control the different kinds of pitch with up or down, left or right moves of the joystick. You also control the fielders as they run to get under the ball and catch it. But you have to watch out for the obstacles in this. It isn't, as I said, a smooth flat stadium. There is a tree stump, some bushes, a puddle where you wouldn't expect it that a fielder could easily slip on and one stumble can slow you up enough to let a runner grab another base — particularly if you're playing the computer.

A full game is nine innings. The scoreboard marks each innings as you play it.

Epyx rate this game as having both action and strategy. You certainly have to beat your joystick around fast to get the home runs but you have to think both at the beginning and during the game about the different — and they really are very different — capabilities of the teams you pick. They might like "Radar", know where the ball is going at all times or like Brad, throw like a demon but run like a snail. Or there's Bojo who hits stratosphere high but often too late and couldn't catch to save his life. And there's Julie who throws better than almost anybody but gets excited at bat and strikes out.

And that's what Street Sports Baseball is all about. People — and the different way they do things — some good and some not very good. The game itself is terrific fun but the challenge of trying to manage a team like this is totally absorbing. It is the absolutely best game of its kind so far in 1987 — and the best part of it is that it will go on being great well into 1988.

There's a bonus too on the disk version we played. There's a demo of Street Sports Basketball. Four different courts and the same widly varied players. The graphics are amazing with all sorts of little tricks the like of which you've probably never seen before. We wait with lip-licking anticipation for Street Sports Basketball to arrive. Helen Browne, US Gold, Epyx, you can even sent it to us to play on a Sunday — just get it to us — soon!

Graphics: ★★★★★
Sound: ★★
Playability: ★★★★★
Rating: Awesome
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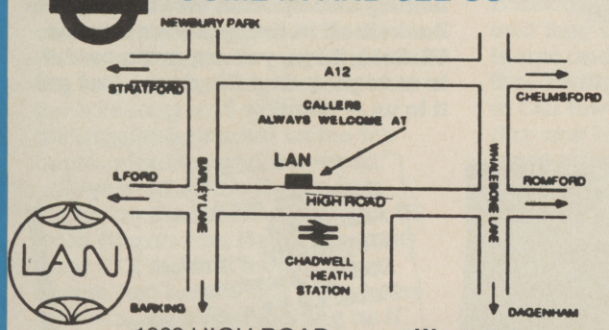

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TOP TEN

Chart Chatter

Six new entries this month and a top level sensation. Barbarian was briefly number one during the month but was overtaken by this year's biggest smash System 3's Last Ninja in its first 4 weeks it's claimed to have sold over 50,000 on the 64. Ocean's great Wizball deservedly climbs to number 3. There are new entries with Firebird's I Ball topping the budget games followed by a re-entry BMX Simulator and a new one Thunderbolt both from Codemasters.

C64

	GAME TITLE	COMPANY		Price(£)	Rating
1	Last Ninja	System 3	★	9.95	Awesome
2	Barbarian	Palace	↑	9.99	Crisp
3	Wizball	Ocean	★	8.95	Mega
4	I Ball	Firebird	★	1.99	Mega
5	Six Pak	Elite	↓	9.95	Mega
6	Milk Race	Mastertronic	↑	1.99	Crisp
7	BMX Simulator	Codemasters	★	1.99	Mega
8	Four Great Games	Microvalue	★	3.99	Mega
9	Thunderbolt	Codemasters	★	1.99	Crisp
10	Auf Wiedersehen Monty	Gremlin	↓	9.99	Mega

★ = New Entry

C16

Monty bounces back into number one spot possibly from all the 64 Auf Wiedersehen publicity. Paperboy slips a place but Gwnn enters rising fast. Codemasters' Terra Gognita finds its way back in as does Awesome-rated Phantom.

1	Monty on the Run	Gremlin	★	6.95	Mega
2	Paperboy	Elite	↓	7.95	T.B.A.
3	Gwnn	Mastertronic	★	1.99	Mega
4	Terra Cognita	Codemasters	★	1.99	Mega
5	Phantom	Tynesoft	★	6.95	Awesome

Super Felix is "Fee-line". That means pay cash and he won't m

Your Little and Large Computer People

There was once a magazine called "Your Computer". If you've had a computer for a few years perhaps you'll remember it. It was, I believe created by a man called Richard Hease — a sort of Richard Branson of the computer world. He sold it and bought it back. It was what they used to call "an interesting read" treating computer users as if they were human beings. Probably a mistake. Later it was edited by our old friend Frankie Kafka — known for his vivid imagination. "It was a dull weekend all that happened was I bought a Fiat sports car on Friday and wrote it off on Sunday and my father bought the whole of the Guinness company and my mother became a Blue Nun." Now it appears it is all no more. Or rather that it has passed into the editorial keeping of what is being called in the computer world "The ODD Couple". The Editor is reputed to be about 14 and whose main, possibly only interest, is in impressing everyone with his stories of which cars he and his friends have recently considered buying. His conversation, I am told, is very boring and goes roughly, "Citroën Light 15? Never! What's really worth buying is a 1952 Standard Vanguard!" Yawn. He is assisted in killing off "Your Computer" by a little girl who must be somewhat older than she looks for she tells everyone contemptuously that she is the only college-educated person in the organisation. It is believed that her main qualification for an editing role was also an association with cars. This was that during a driving test she managed to steer her vehicle in reverse with a loud crunch into a stationary car behind. The examiner was unsympathetic and failed her. However this clearly qualified her for a leading post on Your Car, sorry Your Computer — though she declares proudly her knowledge of computers was virtually nil. The Editor's other qualification appears to be that he owns a Scimitar — no not a sword — but the worst reputation for rust-producing of anything that has come out of a UK car factory. "You can always tell a Scimitar has gone by," a bankrupt ex-Scimitar owner friend told O.S.E. "It leaves a brown trail behind." I'm not sure if the trail is left by the car or due to its effect on its owner. Rumours have reached me that the Tall Editor and Short Assistant are united by more than professional relationship. I can't believe it, she appears relatively normal. But it does seem that the Editor's attention to other things like airplanes — I hear he wants to be an airline pilot, I will keep you informed of the air company to avoid — may be one of the reasons that "Your Computer" is surrounded in shops like W.H.Smiths by crowds of snoring people. Apparently just picking it up is a substitute for a sleeping pill and doctors are beginning to prescribe it for insomnia. It has been suggested that Richard Hease could get some cheap publicity for his star magazine by driving its editor's rust-bucket Scimitar into the sea off Northern Ireland. A concerned and sobbing ex-reader of Your Computer spoke to me recently about organising an immediate funeral service for this one "interesting read". I told him that a funeral today was premature but possibly not by much.

ANCO RIDES AGAIN

And who I hear you cry, is this elephant riding Holy man? When this photo arrived in the diplomatic bag from India's P.M. Ragiv Gandhi, we've asked the same question. A little birdie tells us it might be His Holiness Anil Gupto of Anco accompanied by the German Ambassador who is using a ritual gesture ('poking the arm') to indicate his respect. Anybody who buys an Anco game these days is assured of direct entry to heaven.

Computer People No 2

The Product Development Manager

I have been asking some of my very dear friends in the world's most famous software companies what they think of Product Development Managers. I am very sorry to tell you that as this is a magazine that all the family can read (I personally would not let my feline mother read it but we are a sensitive family). I cannot repeat to you the highly insulting definitions that were given me, what are the qualifications for this mysterious post? First a Product Development Manager must *never* never be an intelligent person. If he (they are generally 'he') were then he might understand what the programmer is trying to do and that's not what he's there for, he is there to obstruct the programmer and keep him in his place. He must also avoid being creative because then the PDM might help produce a better game. And he's certainly not there for that. Thirdly he must never be polite. His position must only go to a totally ignorant rude person who has been properly trained in phoning late at night swearing and slamming down the phone in the middle of conversations. He must not play games well or he might find out what is good about a game. He must be absolutely illiterate — so that he won't answer letters and innumerate so that he can't add up his own expenses — except in his own favour. Preferably he should be an alcoholic so that any answer he gives will be incoherent and his personal hygiene — in other words he doesn't wash — be definitely absent. He must puff at cigarettes and drop ash on computer tapes that contain the unique example of a brilliant new program by a programmer who died in the effort and his breath must curl a floppy disk. He will anyway stand on any disks within a metre of him and jam any cassettes automatically. He is always late and when with a programmer in a pub always forgets his wallet. He has known everybody from Geoff Brown to David Ward to the newest office boy in Ludlow yet not one of them recognise him when he approaches them at the PCW Show. Do not leave your recently written program, cheque book, family silver, new colour monitor, girlfriend, small son or CCI near him or they will never been seen again. While his main task is supposed to be to take responsibility to see that a computer game is created from conception to release, he will do nothing except take all the credit for any success and deny he knows you if it is a flop. He has worked for all the well-known games houses that have gone bust and tells you that Activision and US Gold are dying to have him come and work for twice the salary he's getting now. All programmers hate him. All MD's of game houses hate him. All journalists hate him. Even all other Product Development Managers hate him. He is the one person without whom no game would ever be produced. I know that because he told me — several times.

M.W. PREFERS YORK TO BOURNEMOUTH - I WONDER WHY? NATASHA AND SCOTT HAVE BOTH LEFT FOR THE PYRAMIDS AND THE PYRAMIDS (S... WATCH THIS SPACE

n'mention you... unless somebody else pays me much, much more !!!

(NO SIR DAVID THIS ISN'T YOU)

Vive La Difference!

Our Sacred Editor has stars — or should I say "etoiles"? — in his eyes again. He was visited by Nathalie, an ultra chic writer from the French computer magazine, TILT. Nathalie is a kind of Modesty Blaise or Supergirl

of the French computer world and has her adventures chronicled in the pages of TILT — which is the main reason it sells over 80,000 copies, many to Commodore owners who have no magazine of their own in la pauvre France. Now O.S.E. goes around singing to the tune of La Marseillaise phrases like Oooh la la! and Oú sont les neiges d'antan? — whatever that may mean. Lesley Headlines, the ever more powerful computer PR person, engineered the introduction as bribe to get CCI to mention CRL's latest games Traxxdon and Discovery. But O.S.E. and me are of course totally incorruptible and would never mention either CRL's Traxxion or CRL's Discovery or even CRL's Traxxdon *and* CRL's Discovery merely for the attentions of the most glamorous and intelligent ('my favourite book is Portnoy's Complaint') computer writer this side of the Elysée Palace. Traxxdon? Discovery? CRL? Never heard of them! And I am sure neither have you chère reader. Sacre Bleu! as Marcel Proust, the French Programmer, used to say to O.S.E. "It's enough to make you want to dip Madelaine in the St!" For President Mitterand's opinion of the playability of Traxxdon and Discovery and a signed photograph of Clement Chambers jumping off the Eiffel Tower please send 1000 very old French francs (or 5 million florints — what the hell is a forint anyway?) to the Lesley Headlines Anglo-French Friendship Institute, 40 Bowling Green Lane, Paris 16e or dial Francopone 200 01789 R.S.V.P.

Zzap's New Horizons

I don't like to mention other computer magazines. When I do, I get thousands of letters from irate readers complaining about polluting their homes, corrupting their minds and even spoiling their cats' digestions. But, in spite of these very serious inconveniences, I'm going to have to do it. There is a publication you've probably never heard of, called, you won't believe this, Zzap. O.S.E. once named it "a fluff-covered lollipop" which they apparently took as a compliment — have you ever tried sucking a fluff covered lollipop straight from some infant's pocket? Yuk! Still no doubt they often have worse things said about them. The reason I am forced to mention Zzap is that it recently conducted an enquiry into its readers preferences — the printable ones. We find to our surprise that it has 10% intelligent readership — which must be a surprise to most people. Because, believe it or not, Zzap claims that 10% said they also read CCI. What I am most worried about is some of the other readers. I'm sorry to say that they may be dead — or at least suspended numbly in time. Roughly one in 14 — 7% replied that the magazine they read when not sucking the fluff covered lollipop is — wait for it — Commodore Horizons... Commodore Horizons? Who? Well, those of you with long memories will recall that CCI took over Horizons yonks ago — about 15 months in fact. And it ceased, disappeared, evaporated, became no more. Now, I have this terrible picture of hundreds of Zzap readers dropping their fluff-covered lollipop and picking up the same ancient, dog-eared copy of Horizons and reading it again and again and again — without even noticing they've read it before! Doesn't that positively catatonic state horrify you? Their high alertness certainly confirms people's suspicions of the intelligence of the other — non-CCI reading — 90% of Z's readers. Perhaps they can't read at all but just flick through staring blearily at the pictures. Maybe it's used by them for purposes that have nothing to do with information at all. Perhaps we should start re-printing Horizons for them on long soft and pink paper and Zzap could be printed at the same time in the same way, as it is clearly not doing anything else useful to relieve their horrible tedium. Their favourite TV viewing is probably either watching the laundry go round and round in the washing machine or just staring at that fascinating blank screen on the TV when the station closes down. The very thought of them makes me feel chilly. I think I'll take my copy of Zzap and climb into the microwave and warm myself up.

The Aid of the Party

It was not exactly a political event but everybody from the victorious Tory Party was there. I refer, of course, to the little affair that the fabulously wealthy Bulldog d'Oystervilles threw at their estate for the aristocracy of the East Coast. Of course, the Bulldog d'Oystervilles could have replenished the depleted coffers of the Conservative Party with a hundred million without even noticing it but instead they decided to throw a wingding for 50,000 or so wellwishers and tap them for the odd million or two each. Mrs and Mr Margaret Thatcher dropped in and spent an hour turning the hot dogs flown in from the White House and the Chancellor, Nigel Lawson sold toffee apples. Sadly when about a hundred CCI staff tried to get to our truly wonderful designer's party they were kept out by the Special Branch and the S.A.S. whom Lady Janet had ordered to "Shoot on sight any Leftie revolutionaries who come within a mile of the place!" Sir Graham who personally designed and baked the bricks for the barbecue that will take three whole oxen or two virtually extinct whales — is more liberal and ensured that the CCI staff were only detained for the weekend in an underground potting shed that doubles as an atom shelter cum radar control station. I don't know what went on there but all I can say that the white faced CCI staff will not even now admit having been in Essex that weekend. Lady Janet collects diamonds and is 21. Sir Graham is Austin 7.

WHO IS THIS MAN?

YES WE KNOW ITS MARTECHS DAVID MARTIN ON THE RIGHT - BUT WHO IS THE OLD GENT ON THE LEFT? (IT WOULDN'T HAVE HAPPENED IF PRESIDENT REAGAN WERE STILL ALIVE)

SHREDDED ANY GOOD TUBES LATELY BOG?

MEGA REVIEW

C64

CRISP

Slap Fight — Imagine

Slap Fight — strange name for a scrolling shoot 'em up — sounds more like a female version of International Karate!

Converted from the arcade machine, Slap Fight continues the recent trends of scrolling shoot 'em ups with the now rather tired idea of collecting weaponry as you go. The story is pretty simple, just to destroy the alien inhabitants of the planet Orac in your Slap Fighter space craft.

The game starts with our Slap Fighter flying over a slowly scrolling landscape that looks something like the tops of old houses with gardens and paths in between. There is a shadow under your slap fighter which at first gives the impression of low flight, until you fly over a high roof top for example, when the shadow stays the same distance from the space craft, totally ruining the effect.

The nasty aliens will come at you along the paths and attempt to shoot you. At first, you move very slowly, but when certain aliens are shot, a star is left behind. These stars act like credits and can be used to gain extra speed, or saved up to obtain a variety of different weapons. The weapons vary from helpful to lethal. The best weapon being homing missiles. Pressing the fire button sends a missile out to every target on the screen and all are guaranteed successful.

Apart from the background, the game doesn't vary much as you progress.

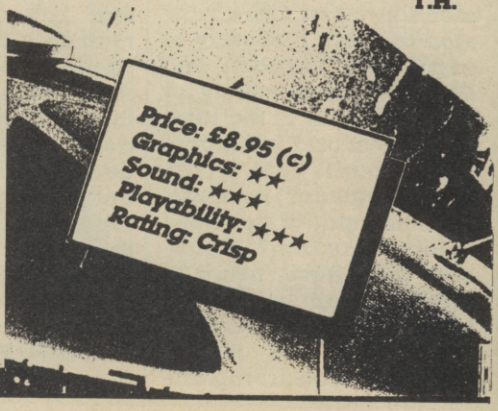
I'm not too keen on the graphics. The first background has a poor choice of colours, orange, green, grey and white, and isn't very interesting. There is also little variation in the sprites which are mainly circular grey things.

However, I don't want to slag off this game. It must be said that it's good fun to play when you've built up some decent firepower, especially the homing missiles that dispose of the enemy very effectively.

Slap Fight isn't really up to scratch in the sound department with the music and sound effects being rather half baked. One of the '64's three voices used for effects and leaving only two for the music resulting in a somewhat 'flat' soundtrack and simple effects.

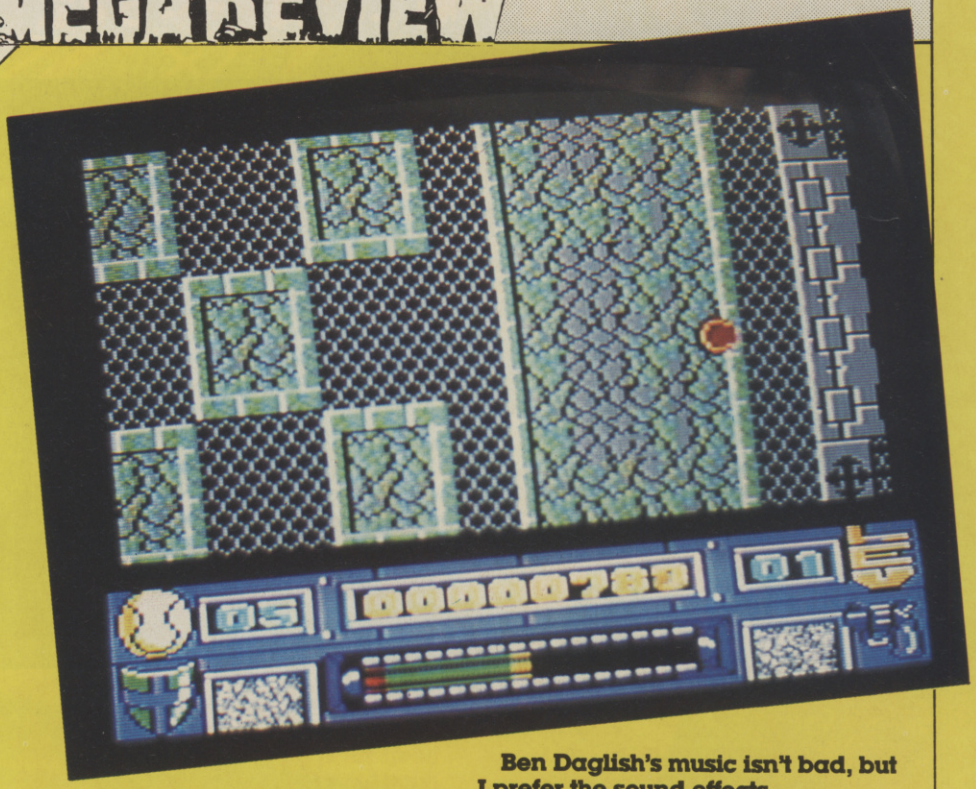
Slap Fight has neither anything new, or impressive graphics, but still remains worth playing for a while, although when compared to some similar budget games, it does seem rather over priced.

T.H.



C64

CRISP



Re-Bounder — Gremlin

There's definitely something strange going on down at Gremlin. I don't know who it is, but someone there obviously has a thing about bouncing. It all started with Thing on a Spring, then Bounder, followed by Trailblazer, Thing Bounces Back, and now Re-Bounder. All have one thing in common — bouncing! Perhaps someone at Gremlin is in fact a tennis ball, or even a pogo-stick, who knows?

Anyway, enough of this idle small-talk and down to the game. You've probably guessed that Re-Bounder is the sequel to the highly original hit of '86, Bounder. One morning, you wake up to find some horrible bloke has turned you into a tennis ball! This rather annoyed you (to say the least), so you set out to find the nasty Overlord who did this to you, so you can bounce him to death and teach him a lesson. This is going to pose a few problems as the Overlord hangs out in a big fortress in the sky, protected by all sorts of kamikaze aliens.

The game is viewed from directly above showing Bounder growing larger, then smaller as he bounces on the platforms high in the sky with the ground scrolling far below. The main difference between Re-Bounder and Bounder is your ability to shoot the nasties. You might think this would make it too easy, but the aliens are far quicker than before, and make the game just as hard. Another difference is instead of just scrolling from top to bottom, Re-Bounder starts scrolling from right to left, and on the completion of a level, gives you the choice of three different routes to take. To complete a level, you must negotiate the platforms, whilst fighting off the aliens and trying not to fall to your death. The final hazard on each level is a big nasty, like the Mothership in Nemesis, which must be shot a number times.

Most of the courses are made up mainly of platforms, gaps, and a sprinkling of walls, bonus platforms, extra bounce platforms, and pump stations where you can inflate your ball by wiggling the joystick.

Re-Bounder is very similar to Bounder, which will please fans of the original, but I would have preferred something a little more different. I don't think the parallax scrolling works as well as before because the ground sometimes seems to go in the opposite direction.

Ben Daglish's music isn't bad, but I prefer the sound effects.

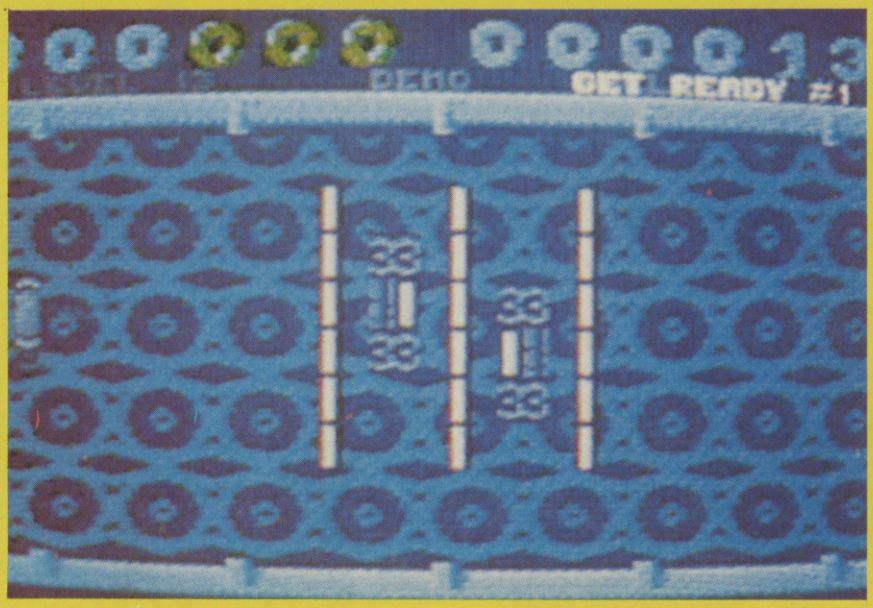
Those who raved over Bounder will doubtless do the same about this, but it's not different enough for my liking. It's a very good game and well worth a look, but Gremlin have a reputation for being highly original and this is a sequel after all.

T.H.

Graphics: ★★★
Sound: ★★
Playability: ★★★
Rating: Crisp
Price: £9.99 (cassette)
£14.99 (disc)

C16

MEGA



Demolition — Anco

Anco are always quick to catch on to fashionable new game ideas, and they've jumped on the band wagon again with this, a kind of breakout game.

Personally, I don't see what all the fuss is about, I mean, this type of game is years old, and the underlying gameplay is the same now as it was then. I reckon Bug-Byte started this craze up again when they released Jail-break a year ago, but now, with improved graphics, sound, and playability comes Demolition.

Anco have opted to imitate Gremlins' Krakout so the game is played with your bat up on the left side of the screen. Once the game has loaded (in a very fast time) you are greeted with a list of options: firstly the options of playing solo, two players taking turns, or head to head must be seen too. You then have the choice of using one or two joysticks, and having the sound on or off. You can also have different ball speeds, 6 being the slowest and 1 being just about impossiball! (How very original). When you have been through all that, the only thing left to do is play the game.

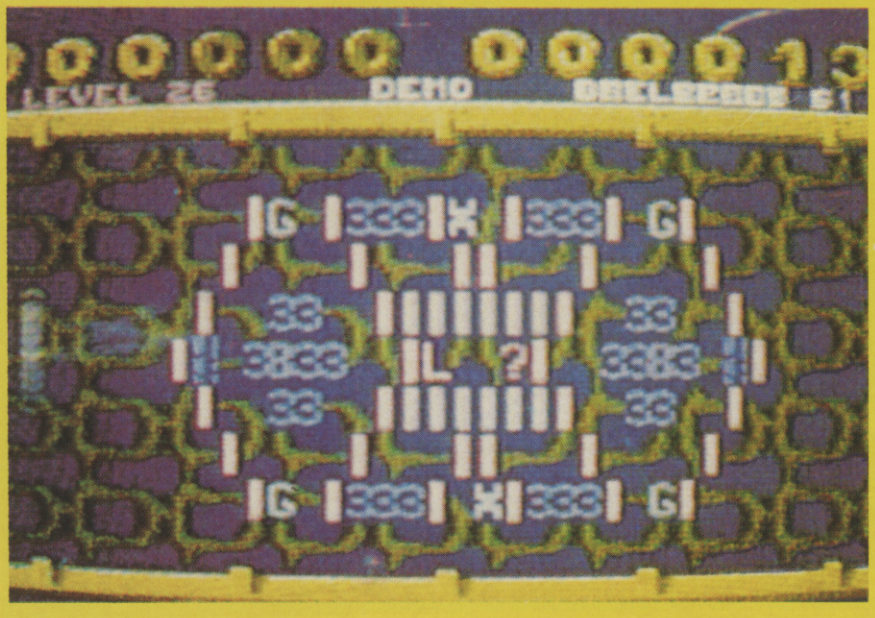
The first thing that hit me as the game started was the unmistakable sound of Joerg Dierks — all his games have the same kind of jingles, and boy are they annoying, but I must admit the sound effects on this game aren't at all bad especially the metal sounding effect of the ball hitting the indestructible bricks.

The first level of the game is quite easy, and it is likely that you will complete it pretty quickly, but as you progress its gets a lot harder — and in some cases very frustrating. But fear not there are special bricks which when hit drop down bonuses, which help in your quest. You can increase the size of your bat, get a wall behind you to stop the ball getting past, acquire an extra life, or even make the ball stick to your bat, so you can place the shot where you want it.

So there it is — the only question now, is how does it play? Well it's good, but it is very difficult and gets too difficult too soon, this is very off putting — I found it hard to even get to the fifth level. But even with this against its name I found it very addictive it has just the right amount of pull to make you come back for more. I did turn off the computer several times, only to load it up again "just to see if I could do that level."

Well done Anco you've made another hit game, but could you give me some pokes for infinite lives? Pleeeaase, I'm begging you! For the Readers, of course!

C.K.



Price: £5.95
Graphics: ★★★★
Sound: ★★★
Playability: ★★★★
Rating: Mega

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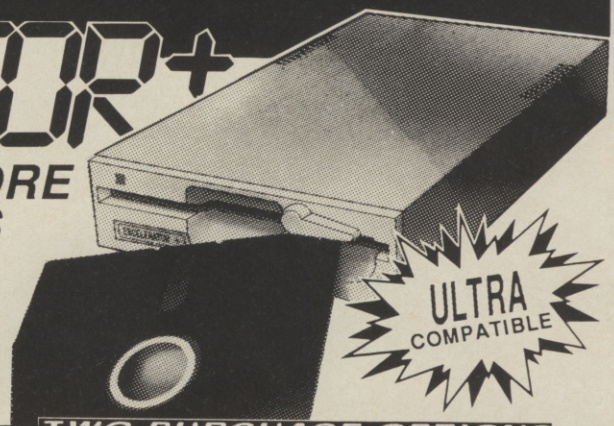

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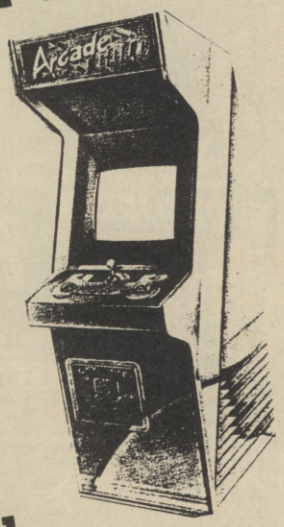
COIN OP COUNTDOWN



Andrew Cash — Coin-op Junkie — gave us a few minutes of his valuable time outside one of London's noisiest, most garishly lit arcades. This is what he whispered.

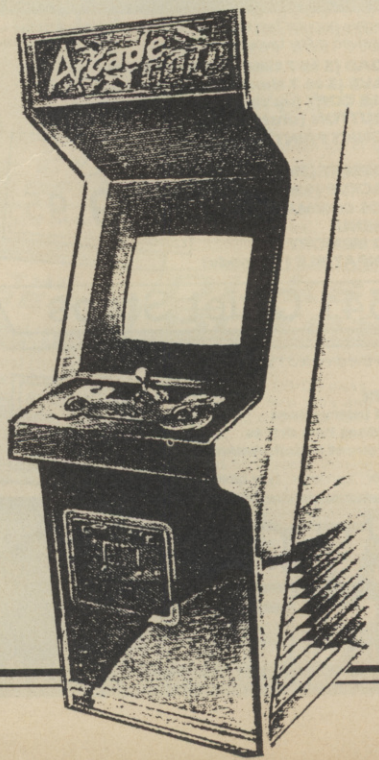
Strange trends continue in the arcades at the moment which threaten to make things even more ridiculous than they already are. Derivation, far from being an occupational hazard, is now a way of life with the likes of Capcom and Taito and I for one am tired of the trend that began with Arkanoid of exuming 4-year old games for the mega-graphic treatment. This month's countdown features the dreaded return of Missile Command, Decathlon, and Space Invaders — Come back 'Pac Man' all is forgiven!

Combat-School

Watch out for this one, it's the machine with no kids around it — and for a very good reason. Creating yet another Decathlon game, no matter how plausible the plot, is not going to please anyone in 1987 and I remain totally unmoved by this. The setting is a tough American military academy (check out 'Officer and a Gentleman' for the definitive image) where your two players can complete on the rifle range, or the obstacle course against a time limit. The graphics are OK, and so's the gameplay but that's the best thing I can say about it. (4/10)

1943

Is the obvious and terrible sequel to '1942', that well known turkey that Elite converted so faithfully last year. This is not to say there aren't redeeming points to it, but doses of Deja Vu this large don't go down well with me. A vertical-scrolling shoot-em-up, identical in style to the prequel, is peppered with every Taito trick in the book — Cloud formations, Multi-directional firepower, extra mini-planes that fly at your wing-tip, Aircraft carriers straight out of 'Flying Shark' (see last month's issue) even a series of icon sprites recycled from 'Side-Arms' that turn into add-on weapons when shot repeatedly. The series of bombing and strafing missions are peppered with some spectacular graphics, but they lack variety, and I soon tired of this even though the gameplay is satisfying and tough. Hello and goodbye! (5/10)



COIN OP COUNTDOWN

R-Type

From Irem also looked a little strange at first, but it rapidly grew on me and now I'm completely hooked. An unashamed rip-off of Side-Arms (see last issue) it shows a chunky space-man scrolling left to right against a hoard of wierd and challenging foes. The firepower at your disposal is staggering, including a very useful 'Bit' that either shields you or detaches to form an extra weapon. The ability to control this Bit, as well as the power of your weapons (there is a Beam gauge at the bottom of the screen that builds up with energy as time passes) make this far more tactical than your average shoot-em-up. But where R-Type really comes on strong is in the graphics. Some of the backgrounds are clearly Nemesis-inspired, but others are easily the most impressive I have seen in the arcades. On level 3 there is a space-ship to be attacked, complete with thrust engines, weapons-posts, and detachable shuttle-crafts, that is over 4 screens wide! It really has to be seen to be believed, as do the other mutations that hurl themselves at you at the end of each level. A truly astonishing game that should put IREM really on the map. (9/10)

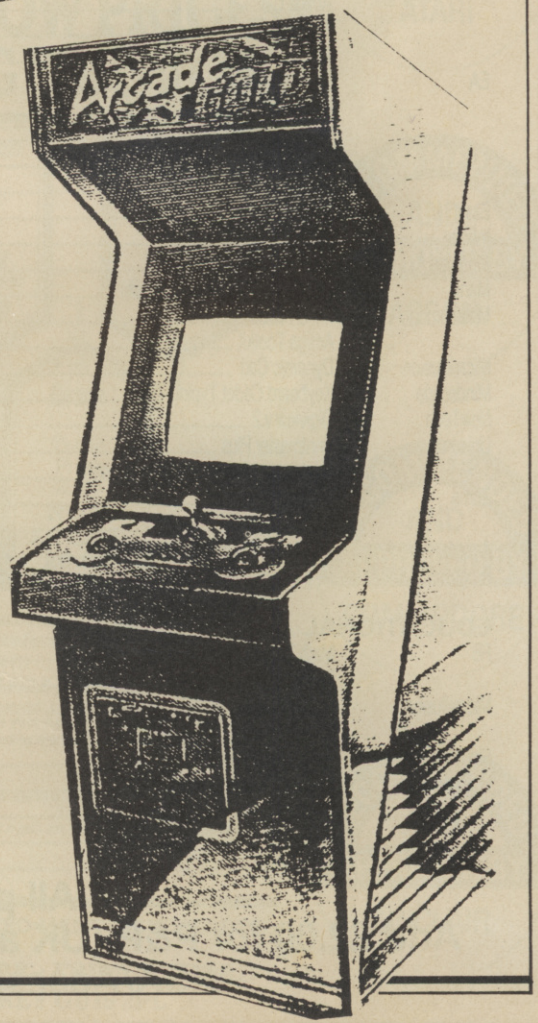
SDI

For all its great-sounding name this is 'Missile Command' complete with trackball and nebulous explosions. The game is 2D, with a forced 3D perspective to show the trajectory of missiles as they arc out of orbit and then back down towards the planet again. Your laser base is mobile, dotting around the screen and firing blasts at the incoming missiles. If you are not quick they separate into warheads and finally they hit cities on the planet — obviously your objective is to avert this. There are both attack and defence stages, and the graphics on the attack stage are far superior and less derivative. The game demonstrates once again how enjoyable a means of control the Trackball is, and if you don't agree check out Marble Madness, World Cup (Tekhan) or the original Missile Command. (6/10)

Batlantis

Another real oddball from, of all people, Konami. The game is viewed directly from above with your armoured warrier defending his castle ramparts from the enemy. The attackers advance rank by rank, with the occasional larger opponent moving left to right across the top of the screen. Shoot this and he leap-frogs onto your rampart where he may be absorbed from extra weapons and powers. If this sounds like a great new games concept, let me enlighten you — This is Space Invaders, and frankly why Konami bothered escapes me. Of course the graphics are improved, but some of the expanding sprite routines are naff to say the least, and the gameplay stinks. Yukk! (2/10)

What that Andrew Cash slunk away, followed his trembling arm loaded with coins ready for insert and returned to where the action happens. It's 48 hours and he still hasn't come out. Maybe we can reach him by next month.



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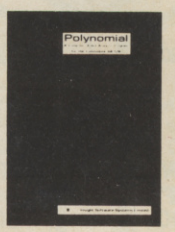

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Before I was Interrupted

We started off this series of articles by explaining how interrupts worked, and in the course of the series have looked at such topics as hardware interrupt vectors, raster interrupts and so on. In that time we have also given you routines to scroll six screens of data both horizontally and vertically (using raster interrupts to control the smoothness of the scroll), to play a background musical soundtrack that could last for anything up to ten minutes and beyond (by using hardware interrupts), and also a short demonstration of how one might move sprites around under interrupt control.

The time has come to put all this together and start thinking about how all these routines might be used in the production of an arcade game.

First the bad news. What you'll be getting is not a complete game, you will have to finish it off. Otherwise there'll be several million (audited circulation of CCI and still rising) copies of the same game being issued by people, and you've got to have some spark of originality out there.

But now, the good news. By the time we get to the end of this article you'll have sprites whizzing around, tunes playing, screens scrolling, and still have a lot of memory left in the 64 for your own machine code routines to add the finishing touches to the game. Or you can do it in BASIC if you want. Memory left available to you (not including the demonstration program which only serves to show you all the various features in action) is from the start of BASIC at $0800 (2048 in decimal) to $3FFF (or 16383 in decimal), which gives you 14K to BASIC to play with, and from $7000 (or 28672 in decimal) to $9FFF (or 40959 in decimal), which gives you around 12K of space in which to deposit all those machine code routines.

Back to the beginning

Before we progress any further you'll need to have an assembler, monitor, or whatever, sitting in memory somewhere. Somewhere, preferably, that leaves the space from $COOO to $CFFF free, because we're going to be using that. The only reason you'll need the assembler is to save the finished product as one complete program rather than having to load in individual parts all the time. You'll need to save from $CODO to $CFFF.

Right. Load in the loader for the horizontal scrolling program and run it. Next, load in the loader for the vertical scrolling program and run that. Finally, load in the loader for the musical interrupts program and run that one as well. Three separate programs that occupy totally different parts of memory. Don't save anything yet though, because you'll now need to type in the following program and run that, making sure that the checksums agree and everything is hunky dory. There'll be a final couple of changes to make before we can save off the whole thing after that, so don't get too carried away just yet.

This routine patches everything together, as well as allowing us to move a sprite around the screen and fire a few missles at things which should give you the basic start of an arcade game. A little bit of thought on your part and the game is yours. The changes to be made to the rest of the routines are as follows:

```
POKE 52955, 76: POKE 52956, 240:
POKE 52957, 204
POKE 53053, 76: POKE 53054, 240:
POKE 53055, 204
POKE 53082, 76: POKE 53083, 240:
POKE 53084, 204
```

This allows program flow to carry on at the right place after the latest bit of interruption has been used. The programs are now all linked up properly, and the whole section from $CODO to $CFFF can be saved as a complete program.

What the additions do

Apart from linking everything up, this latest loader gives us a reasonably attractive addition to the routines that you've seen so far, and is once more running under hardware interrupts. Don't try running it yet though, a little bit more data is needed before anything interesting will happen.

A reasonably short BASIC program that defines five sprites and puts up a screen display to allow you to see what's going on. It takes a while to set everything up, so be patient and just listen to the music while it's doing that. Just in case some of you aren't familiar with the various codes I've used in the listings for the Commodore control characters, let's take a look at line 180 as an example.

Enter PRINT" as normal, but not the square brackets. Then, press CTRL and 9 to activate reverse on mode, followed by CTRL and 2 to change the printing colour to white. Do not enter the comma! Then, the words THE WIZARD! must be entered (John D. Ryan, he gets everywhere), followed by CTRL and 0 to turn reverse mode off, hold down the CBM Logo key and press the '+' sign, press the space bar fifteen times, hold down the CBM Logo key and press the '+' key again, press CTRL and 9 to turn reverse mode back on again, and finally enter a space, the words TO FIRE!, three spaces, the "marks and a semi-colon at the end of it all.

When this program is run (and assuming you have all the loaders now joined together as one and saved off as a file somewhere, you will here some terribly raucous noises being played. This is because the musical interrupt part of the program is trying to play a tune that is probably not there. You'll remember from the article on the musical interrupt soundtrack the techniques required to put some music there, so go to it before anything else happens.

Eventually the screen will clear, and apart from various messages on the screen you will see a six screen block of data scrolling left to right, then up and down, then right to left, down and up, before going back to left to right again. Lines 260 to 320 of the demonstration program control that.

You will see a sprite in the middle of the screen, a sort of target thing, and this can be moved by using the keys 'Q' and 'E' for left and right, or 'U' and 'N' for up and down. Refer to the article on interrupt driven sprites for explanations of how to change three keys. You will note that the sprite is only allowed to move within the box that is made by the two scrolling screens joining up. No real reason why, it just looks tidier. Again, you can alter this if you wish.

The screens, of course, will probably be displaying naught but garbage, although the two articles on scrolling up and down and left and right explain how to put data into those screen areas and once more you should refer to those if you want to see something a shade more attractive than bits of random RAM scrolling around.

The final addition to the program is a FIRE routine, which is activated by pressing the RETURN key. Doing that causes a little spaceship type missile to be launched in the direction in which the target sprite was last moving. This is done by the latest loader, which puts an interrupt routine in that scans the keyboard, looking for the keys Q, E, U, N or RETURN. If one of the four letter keys is pressed then program control goes off to the appropriate part, and the value of the key pressed is stored in memory somewhere. Then, when the routine detects that the RETURN key has been pressed, it looks at that memory location to see where the target sprite was lasting heading, and goes off to the appropriate part of the code in order to send a missile off wielding its powers of death and destruction. These powers are a mite dormant, and become just one of the many routines that you will have to write yourself in order to turn these disparate parts into a complete whole. I have missed enough episodes of EastEnders doing all this, now its your turn.

The data for the sprites is stored in lines 432 to 820, in the form of four bytes to indicate whether its going to be a multi-coloured sprite, and what the three colours will be if it is one, followed by sixty four bytes of data for the sprites themselves. Only two sprites are visible on screen at any one time, since a missile fired is allowed to leave the screen before anything else can happen. This allows you to easily have another six sprites doing whatever turns you on as a games designer, since the four missile sprites are all activated by POKEing (or in this case loading the accumulator with something and storing it at location 2041) 2041 with the value of 249, 250, 251 and 252 depending on which way the missile is going. There might be five sets of sprite data (target and four missiles) but only two are used at any one time. This leaves locations 2042 to 2047 free for your own sprite data.

And that, dear reader, is just about that. The rest is up to you.

Conclusion

You can now scroll about, play tunes, move sprites, fire missiles, and still have 14K for BASIC and 12K for machine code easily accessible. That should be more than enough to turn these raw basics into a more complete game, and I wish you the best of luck. Perhaps our noble editor could be persuaded to offer some sort of prize for the best game that one of you comes up with: your tape returned, or something like that!

But I digress. One John D. Ryan, MotorBike Repair Man, Wizard, man of nom de plumes multitudinous, started all this off with a casual suggestion one evening over a glass or five of whiskey, so I think he deserves the last word really. I showed him the final all-singing all-dancing program, and after a few muttered "yeah, great, really good Pete, cheers" he advanced to "anyway, I've got this Garfield video..." Did it have interrupt driven sprites? It did not. Did it have interrupt driven musical soundtracks? It did not. Did it feature raster interrupts and smooth scrolling? It did not. Now, all I have to do is write a game with Garfield in it. I hate that cat sometimes.

Good programming!

P.G.

DEMONSTRATION PROGRAM

```
1 PRINTCHR$(142)
2 POKE 55,0:POKE 56,64:POKE 50255,0
10 V=53248:X=160:Y=130:POKEV+0,X:POKEV+1,Y:S=54272:POKES+24,15:POKES+5,9
12 POKES+2,255:POKES+3,105
30 POKE 50432,0:POKE 50433,1:POKE 50434,0:POKE 50435,10:POKE49707,10
    :POKE49771,1
```

```
0
40 PRINT"[CLR,WHT]";:POKE53265,1:GOSUB900
50 POKE 49703,40:POKE49767,40:Z=10:GOSUB380
60 FORI=1TO5:PRINT"[RVS,GRN,40SP]";:NEXT
70 FORI=1TO5:PRINT"[RVS,RED,40SP]";:NEXT
80 FORI=1TO5:PRINT"[RVS,YEL,40SP]";:NEXT
90 FORI=1TO5:PRINT"[RVS,BLU,40SP]";:NEXT:PRINT"GRN";
100 POKE 53281,0:SYS49952:POKE50432,PEEK(50432)-1:POKE 53281,0
    :POKE53280,9
110 FORI=0TO199:POKE1824+I,160:POKE56096+I,5:NEXT:POKEV+21,3
115 POKEV+23,1:POKEV+28,3
120 PRINT"[HOME]";:FORI=1TO5:PRINT"[RVS,GRN,40SP]";:NEXT
130 FORI=0TO4:FORJ=0TO14:POKE1036+J+I*40,160:POKE55308+J+I*40,8:NEXTJ,I
140 FORI=0TO4:FORJ=0TO14:POKE1836+J+I*40,160:POKE56108+J+I*40,1:NEXTJ,I
150 PRINT"[HOME,CD,RVS,WHT]'Q' LEFT   ":PRINT"[RVS,WHT]'E' RIGHT  "
160 PRINT"[RVS,HOME]"TAB(31)"[CD,WHT]'U' UP   ";
161 PRINT"[RVS,HOME]"TAB(31)"[2CD,WHT]"'N' DOWN ";
165 PRINT"[HOME,4CD,WHT,OFF,12CBM+,BRN,15SP,WHT,13CBM+]"
166 PRINT"[HOME,20CD,WHT,12CBM+,15SP,WHT,13CBM+]"
170 POKEV+29,1:POKE2040,248
172 FORI=0TO4:POKE1035+I*40,102:POKE1051+I*40,102:POKE55307+I*40,1
173 POKE55323+I*40,1:NEXT
174 FORI=20TO24:POKE1035+I*40,102:POKE1051+I*40,102:POKE55307+I*40,1
175 POKE55323+I*40,1:NEXT
176 PRINT"[HOME,22CD,RVS,WHT](C) DIMLI &
177 PRINT"[HOME,22CD,RVS,WHT]"TAB(28)" HIT RETURN "
178 PRINT"[HOME,23CD,RVS,WHT]";
180 PRINT"[RVS,WHT]THE WIZARD![OFF,CBM+,15SP,CBM+,RVS] TO FIRE!   ";
260 POKES+4,0:POKES+4,129:POKES+1,10:SYS49408:GOTO310
270 POKES+4,0:POKES+4,129:POKES+1,18:SYS49440:GOTO280
280 POKE 50456,0:POKE50467,0
290 REM
300 POKES+4,0:POKES+4,129:POKES+1,22:SYS 50656:GOTO260
310 REM
320 POKES+4,0:POKES+4,129:POKES+1,14:SYS 50896:POKE53265,27:GOTO270
380 FORI=0TO4
390 READA,B,C,D:POKEV+37,B:POKEV+38,C:POKEV+39+I,D
400 FORJ=0TO63
410 READA:POKE((248+I)*64+J),A:NEXTJ,I
420 RETURN
430 DATA 1,1,9,5
432 DATA255,255,252,234,154,172,234
434 DATA154,172,234,154,172,234,154
436 DATA172,234,154,172,234,154,172
438 DATA233,85,172,233,153,172,213
450 DATA85,92,233,153,172,233,85
452 DATA172,234,154,172,234,154,172
454 DATA234,154,172,234,154,172,234
460 DATA154,172,234,154,172,255,255
470 DATA252,0,0,0,0,0,0,0
480 DATA 1,1,9,12
490 DATA3,255,192,3,150,192,3
500 DATA150,192,3,85,192,14,85
510 DATA176,58,85,172,234,125,171
520 DATA235,105,235,238,170,187,250
530 DATA170,175,234,170,171,234,170
540 DATA171,234,170,171,234,170,171
550 DATA234,255,171,235,65,235,237
560 DATA65,123,245,65,95,197,65
```

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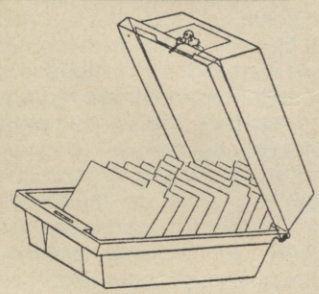

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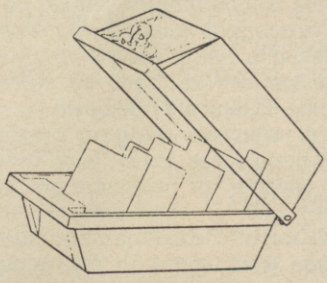

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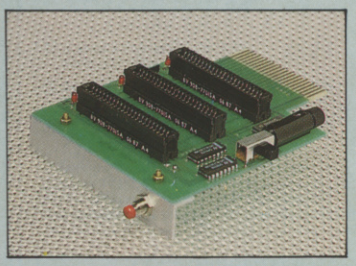
```
570 DATA83,197,65,83,193,0,67,0
580 DATA 1,1,9,12
590 DATA255,240,0,14,172,0,3
600 DATA171,0,0,234,192,1,122
610 DATA176,5,122,172,21,122,171
620 DATA5,121,171,1,121,107,0
630 DATA57,91,0,57,91,1,121
640 DATA107,5,121,171,21,122,171
650 DATA5,122,172,1,122,176,0
660 DATA234,192,3,171,0,14,172
670 DATA0,255,240,0,0,0,0,0
680 DATA 1,1,9,12
690 DATA0,255,255,3,170,176,14
700 DATA170,192,58,171,0,234,172
710 DATA0,234,181,0,234,181,64
720 DATA234,181,80,233,181,64,229
730 DATA181,0,213,176,0,229,181
740 DATA0,233,181,64,234,181,80
750 DATA234,181,64,234,181,0,234
760 DATA172,0,58,171,0,14,170
770 DATA192,3,170,176,0,255,255,0
780 DATA 1,1,9,12
790 DATA 193,0,67,197,65,83,197,65,83,245,65,95,237,65,123,235,65,235
800 DATA234,255,171,234,170,171,234,170,171,234,170,171,234,170,171
810 DATA 250,170,175,238,170,187,235,105,235,234,125,171,58,85,172
820 DATA 14,85,176,3,85,192,3,150,192,3,150,192,3,255,192,0
900 REM
905 S=54272:POKES+24,15:POKES+12,15:POKES+13,0
906 POKE52942,0
907 POKES+19,15:POKES+20,0
910 POKE52943,0:POKE53166,0:POKE53167,0
920 SYS49360
925 RETURN

READY.


ALTERATIONS


10 FORI=1TO4:READS(I),E(I):NEXT
15 FORI=1TO4:READT(I):NEXT
20 FORI=1TO4
30 B=0:FORJ=S(I)TOE(I)
40 READA:POKEJ,A:B=B+A:NEXTJ
50 IFB<>T(I)THENPRINT"DATA ERROR IN BLOCK"I:STOP
52 PRINT"BLOCK"I"ENTERED CORRECTLY.":NEXTI
100 DATA49360,49370,51456,51659,51696,51707,52464,52893
102 DATA1177,27517,1729,63411
200 DATA169,208,141,020,003,169,206,141,021,003,096
250 DATA174,002,208,202,202,202,202,142,002,208
260 DATA224,005,176,011,032,246,201,169,000,141
270 DATA006,212,076,147,205,076,031,205,040,087
280 DATA008,084,173,016,208,201,002,240,024,032
290 DATA096,201,234,234,234,234,224,251,144,040
300 DATA162,002,142,016,208,162,000,142,002,208
310 DATA076,031,205,032,096,201,234,234,234,234
320 DATA224,080,144,016,162,000,142,016,208,032
330 DATA246,201,169,000,141,006,212,076,147,205
```

DATEL ELECTRONICS



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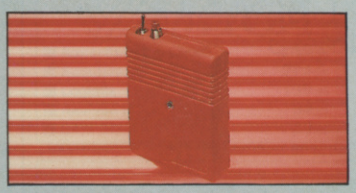

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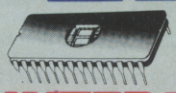

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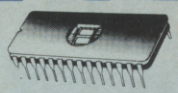

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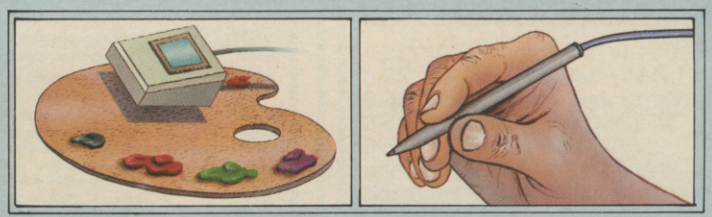

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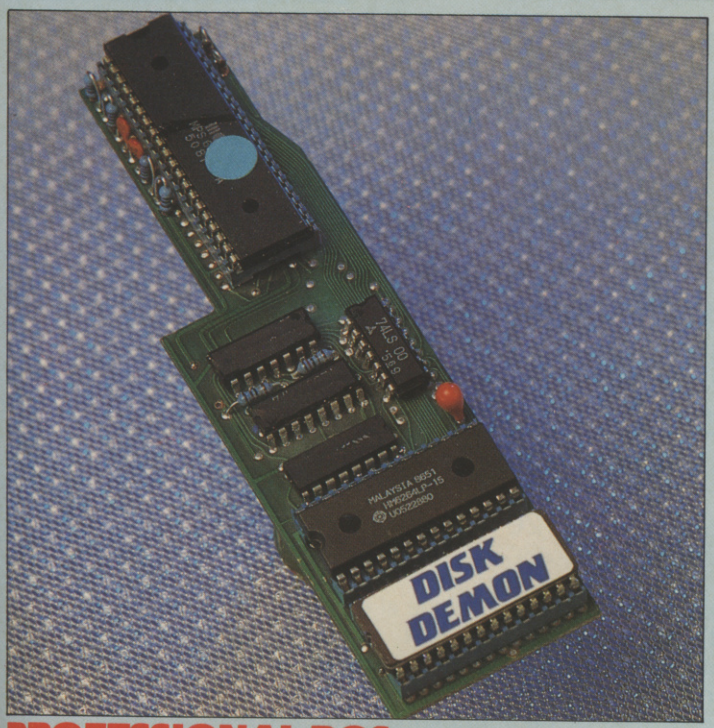

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- C64 or 12 modes.

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❑ 1541 PARAMETERS MODULE

- AUTO NIBBLER: Copy an entire unprotected disk in under 1 minute. Features auto track/sector analyzer.
- FAST COPY: Copy entire disk in 36 seconds with verify.
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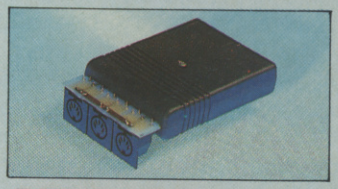

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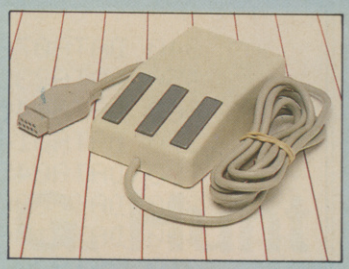

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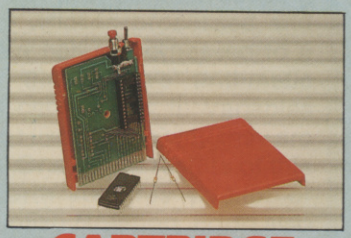

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```
340 DATA076,031,205,087,168,033,174,002,208,232
350 DATA232,232,142,002,208,096,087,040,087
360 DATA040,087,173,252,207,201,062,240,137,201
370 DATA014,240,165,201,030,240,017,201,039,240
380 DATA045,076,031,205,215,255,023,250,071,251
390 DATA000,255,119,251,172,003,208,136,136,136
400 DATA136,140,003,208,192,010,176,011,032,246
410 DATA201,169,000,141,006,212,076,147,205,076
420 DATA031,205,070,250,247,248,172,003,208,200
430 DATA200,200,200,140,003,208,192,240,144,011
440 DATA032,246,201,169,000,141,006,212,076,147
450 DATA205,076,031,205
500 DATA169,001,141,251,207,096,169,000,141,251
510 DATA207,096
600 DATA142,255,207,141,254,207,140,253,207,173
610 DATA251,207,201,001,208,009,076,112,201,234
620 DATA234,234,234,234,234,165,197,201,062,240
630 DATA033,201,014,240,046,201,030,240,059,201
640 DATA039,240,072,201,001,240,085,174,254,207
650 DATA172,253,207,234,234,234,234,234,173,255
660 DATA207,076,049,234,174,000,208,224,119,016
670 DATA003,076,144,205,202,142,000,208,076,144
680 DATA205,174,000,208,224,197,048,003,076,144
690 DATA205,232,142,000,208,076,144,205,172,001
700 DATA208,192,040,016,003,076,144,205,136,140
710 DATA001,208,076,144,205,172,001,208,192,172
720 DATA048,003,076,144,205,200,140,001,208,076
730 DATA144,205,169,000,141,004,212,169,065,141
740 DATA004,212,169,062,234,141,001,212,169,255
750 DATA141,006,212,076,160,205,076,160,205,255
760 DATA141,252,207,169,001,141,000,208,076,031
770 DATA205,255,000,255,000,255,173,252,207,201
780 DATA062,240,025,201,014,240,053,201,030,240
790 DATA097,201,039,240,125,076,144,205,234,234
800 DATA234,234,234,234,234,234,234,234,169,251
810 DATA141,249,007,174,000,208,142,002,208,172
820 DATA001,208,140,003,208,032,240,201,076,000
830 DATA201,208,239,076,144,205,234,234,234,234
840 DATA169,250,141,249,007,174,000,208,142,002
850 DATA208,172,001,208,140,003,208,032,240,201
860 DATA076,032,201,208,239,162,002,142,016,208
870 DATA162,000,142,002,208,232,032,096,206,224
880 DATA054,208,245,076,128,206,234,234,169,249
890 DATA141,249,007,174,000,208,142,002,208,172
900 DATA001,208,140,003,208,032,240,201,076,144
910 DATA201,208,245,076,144,205,234,234,234,234
920 DATA169,252,141,249,007,174,000,208,142,002
930 DATA208,172,001,208,140,003,208,032,240,201
940 DATA076,176,201,208,245,076,144,205,255,000
950 DATA255,000,255,000,255,000,255,000,255,000
960 DATA255,000,255,000,255,160,255,250,142,093
970 DATA206,140,095,206,162,002,160,032,136,192
980 DATA000,208,251,202,224,000,208,244,174,093
990 DATA206,172,095,206,095,000,255,000,255,008
1000 DATA162,000,142,016,208,162,255,142,002,208
1010 DATA076,144,205,255,000,255,162,000,142,002
1020 DATA208,160,000,140,003,208,076,144,205,255

READY.
```

FORTH

An appreciation by Richard G. Hunt

Richard Hunt is an enthusiast for the Forth language. Not so many other people are. Here he examines why those who don't love Forth may be wrong.

In my spare time, if there is such a luxury as that, I act as Plus 4 librarian for ICPUG. Occasionally I have made it known through the medium of the club's magazine me that also I am an aficionado of the language Forth. Imagine my delight therefore when someone wrote to me and asked what Forth is! It is undoubtedly time for me to remind readers and CBM computer owners everywhere (Amiga owners block your ears, cover your eyes and think only of C) of the best, most fruitful and philosophically satisfying computer language ever to see an 8 bit (or larger bus).

First the history of Forth. It was invented around 1979 by one Charles Moore who wished to make his programming output more productive. He produced a Fortran program which did just this. In those far off days of third generation languages he saw it as having aspects of a fourth generation: Forth code looks like English, and can be constructed in more free-form way than any existing 3GL. Alas, the system he used could only accept 5 letter filaments: hence FORTH without the U! (I wonder how much of this is now apocryphal?)

Forth is sometimes called a "threaded, interpretive language". This is merely a reflection on the way Forth code is structured in machine code. Forth consists of a dictionary of "words" which are similar I suppose to BASIC statements but are fundamentally different in that unlike BASIC where a statement must be "crunched" and then interpreted, Forth words are already compiled. This speeds up execution and runs Forth at much faster speeds than interpreted BASIC. In some instances speeds up to 80% of processor speed are claimed. A factor of 10 over BASIC is usually enough! Forth also is extensible. This makes it about the only way of creating a standard non-standard language. You start out with the dictionary Forth provides and write more words and make modules or families of them that extend the dictionary and its capability. You can even re-define existing words so that they run the way you want them to.

Forth has some features that are both fundamental and different if all you have seen is CBM BASIC. Forth relies on the programmer keeping control of what is processed and when. Data has to be passed to a stack so that Forth's arithmetic functions can access it. Variables are just not used in the way they are in BASIC. One of the results of this is that Forth requires postfix or Reverse Polish Notation. Forth also uses integer arithmetic with 16, 32 or intermediate precision. All numbers can be formatted so representing decimal places is no problem.

```
: INPUT  0 0 CR ." >" QUERY 1 WORD HERE (NUMBER) DROP DROP ;

: CHOOSE    ." WHAT NUMBER? " INPUT
            ." TIMES TABLE IS :" ;

: TABLE   147 EMIT  CHOOSE  CR CR CR
          13 1 DO DUP DUP I 2 .R SPACE
                  ." TIMES ".
                  ." =" I * 1 U* 5 D.R. CR
              LOOP;
```

To someone who doesn't know how to read Forth, that is pretty nasty stuff. There are ways of making it read like English, if necessary. For example TABLE could have been written (providing the necessary redefinitions had been made) —

```
: TABLE   CLEAR-SCREEN  CHOOSE  3 CARRIAGE-RETURNS
          11 1 DO-LOOP DUP DUP COUNTER 2 FORMAT-PRINT SPACE
            ." TIMES " PRINT
            ." =" COUNTER TIMES 1 U-TIMES 5 D.FORMAT-PRINT CR
          END-LOOP ;
```

That is perhaps clear but Forth does have words that defy a single English word description. For example, U* multiples two numbers and leaves an unsigned product. D.R. takes a number and displays it right aligned in a field of the given width (5, in our example). Note also how we had to define INPUT before we could define CHOOSE which

uses it, and CHOOSE before TABLE. Each individual word can be defined tested edited and re-tested before being put into another word. In that way the user can be absolutely sure that it works the way it is meant to and tiresome debugging time can be kept to a minimum.

That, to me is pure gold dust!

Although there are several Forth standards, the one used most for CBM machines is FIG-Forth from the Forth Interest Group. Implementations exist for the C-64, VIC-20 and other machines. Forth as it was conceived is not suited to cassette based systems. A good implementation will take this into account and make the required adaptations. Soon a new implementation of FIG-Forth will be available for Plus 4 users with either disk or tape. It is called PLUS4ORTH (© Richard G. Hunt, 1987) and its manual should be ready by the autumn.

RPN is sometimes criticised as being difficult. Actually algebraic notation more usually used by computers is not only more difficult for the machine but has to be learned at school well after the basic arithmetic functions. Consider the problem typically presented at school:

```
23
37 +
```

The operator is placed after the operands to indicate the action required. RPN is identical:

```
23 37 +
```

More complex algebraic statements, e.g. (a+b)*(c-d) require the implied hierarchy of operators to be explicitly placed on the stack:

```
a b + c d - *
```

A little practice with RPN makes it easy!

Forth is philosophically satisfying. Indeed it is a way of thinking that I maintain is positively benign towards any approach to a programming problem. Forth imposes structure rather than accepting structure. Therefore programming starts off with top down design and ends up with modular construction. Spend a little time "getting into" Forth and you will begin to understand what I mean.

Forth is an excellent language to learn at whatever stage of programming you are. There is a story that an elementary programming class was split, half learning BASIC first the other half learning Forth. Each half was then taught the other language. The BASIC group was reportedly indignant that the others were so far ahead. The Forth group saw no point in learning BASIC and did not.

Visually Forth source code is organised into screens or blocks of 64 columns by 16 rows (1K exactly). New words are defined within a 'colon definition' which starts with a colon and ends with a semi-colon. These are directives to the compiler to begin and end compiling. A new word is defined in terms of existing words and may then in turn be used in another definition. Below is a small "program" that obtains input of a number from the keyboard and displays a "times table" duly formatted. Note the spaces between the components. Forth treats a space as a delimiter between two words and so a space is very important to Forth syntax and of course legibility.

★ Programme Submission Procedure ★

DO NOT submit any programme or routine that you do not either own or have proper authority to do so.

ALWAYS include your name, address and the date on all material and any enclosures.
Do not forget to to make it clear exactly which computer/s your programme or article is applicable to.

Include ROM or DOS versions wherever they are pertinent.

Number all pages.

If you have to submit work which is hand-written then you must make sure it is printed clearly.

Never use staples. Use paperclips if necessary.
If you are saving your programme to tape then save it AT LEAST twice on each side.
When you save a programme on disk save it twice and call the second file "BACKUP".

Remember to label all tapes and disks with your name and the title of the programme. Label tape or disk with your name and the name or title of the programme.

Always ensure that disks are well packaged. They should ideally be sent in a commercial disk mailer or at least packed between two pieces of hardboard or rigid plastic.

Please allow at least 8 weeks for acknowledgement as all programmes have to be thoroughly tested and made into a suitable format.

Enclose a self-addressed stamped envelope or package if you would like your programme to be returned.

★ Programming tips ★
If you can, use CHR$(x) type commands instead of those hard to read graphic symbols.
If necessary renumber your programme on completion as many readers use auto number utilities to ease typing in.

Try to keep instructions within the programme itself as a sensible level. You can expand on them within the accompanying text if necessary.

TEST your programmes before submitting them or even better get a friend to test them for you.

If a programme contains machine code data please use decimal and not hex as there are fewer digits to be confused. Try and keep the same number of data statements in each line. Please add some form of error checking if your programme contains any more than five lines of data. There is a suitable routine at the end of this article.

Program

WORDCOUNT

by Gary Gray

PLUS 4

This is a very nice wedge type program to add a new facility to the Plus 4's inbuilt wordprocessor. Once installed pressing the help key will display how many words you have typed up until that point. While not very big we hope it will encourage others to set about writing more wedges. It's not very often we get good Machine code programs for the Plus 4 so this one came as a very pleasant surprise. Very good, Gary!

```
1 REM ************************************
2 REM *                                  *
3 REM *    WORDCOUNT BY GARY GRAY        *
4 REM *                                  *
5 REM ************************************
10 L=819
20 FOR X=0 TO 14:T=0:FOR Y=0 TO 13
30 READ A:IF A <0 OR A >255 THEN 60
40 POKE L,A:L=L+1:T=T+A:NEXT
50 READ A:T=T-(INT(T/256)*256)
60 IF T<>A THEN PRINT"DATA ERROR IN LINE"1000+(X*10)"CHECKSUM <>"A:STOP
70 PRINT1000+(X*10)"OK":NEXT
80 SYS1006
90 SYS1525: 3-PLUS-1
1000 DATA 169,032,133,002,169,193,133,003,169,000,141,240,003,141 ,248
1010 DATA 241,003,160,000,177,002,201,032,240,012,201,159,240,008 ,140
1020 DATA 169,000,141,242,003,076,117,003,173,242,003,208,025,169 ,035
1030 DATA 001,141,242,003,248,024,173,240,003,105,001,141,240,003 ,029
1040 DATA 173,241,003,105,000,141,241,003,216,234,200,208,205,024 ,202
1050 DATA 165,003,105,001,133,003,165,003,201,223,208,190,162,010 ,036
1060 DATA 189,202,003,157,215,015,202,208,247,173,240,003,041,240 ,087
1070 DATA 074,074,074,074,105,048,141,229,015,173,240,003,041,015 ,026
1080 DATA 105,048,141,230,015,173,241,003,041,240,074,074,074,074 ,253
1090 DATA 105,048,141,227,015,173,241,003,041,015,105,048,141,228 ,251
1100 DATA 015,173,202,003,133,002,173,239,003,133,003,096,014,015 ,180
1110 DATA 046,032,023,015,018,004,019,061,165,198,201,003,240,007 ,008
1120 DATA 076,014,206,234,234,234,234,141,063,255,032,051,003,141 ,126
1130 DATA 062,255,076,014,206,162,213,160,003,142,020,003,140,021 ,197
1140 DATA 003,096,000,000,000,000,000,000,000,000,000,000,000,000 ,099
```

CRUNCHER

by Peter Orman

C-64

This is a utility to remove all unnecessary spaces and REMs. It has the very useful added facility of being able to handle any GOTOs or branches to REMed lines that it removes.

Why, you may ask, write another program cruncher when one was published in CCI only just over a year ago? Well this one does more and quicker!

I like to write programs with plenty of subroutines and plenty of REMS, and I like to aim GOTOs etc at REM-lines so that I can much about with the code without having to find and change all the jumps (missing some in the process). On top of this I find it easier to do any debugging or modifications on the fully commented version. This, of course, makes for slow and RAM-hungry programs so I wanted a cruncher that would whizz through sorting out all of the jumps and crunching out REMs and spaces, one that I can use as a matter of routine every time I make a change.

This one does what I need and when it took a 30K program down to less than 20K in under 6 seconds I thought it might be useful to other CCI readers.

How to use Cruncher

Type in and save the Basic loader, "CRUNCHER/LOAD" then RUN it to load the machine code. This is too slow for routine use so I recommend saving the machine code for future use. Do this by typing:

```
POKE 43,0:POKE 44,192:POKE 45,155:POKE 46,197
SAVE "CRUNCHER",8
POKE43,1:POKE 44,8:NEW
```

Thereafter you can load it like any other machine code program. Having loaded the code type NEW then load your basic program. When you've made all the changes for one session, type SYS 49152, then when the screen shows:

```
READY
CLR
READY
```

Save the crunched program under a different name. I use "program/0" for the original and "program" for the crunched version.

Should your program have more than 255 REM-only lines you will get a message: SOME REMS LEFT IN you may then, if you like, recrunch the crunched program.

How it works

On the first pass CRUNCHER skips through the BASIC code, using the links to find the beginning of each line. All numbers of lines starting with a REM token (leading spaces ignored) are entered in a table together with the number of the next following non-REM line.

On the secnd pass it keeps two addresses, one for reading the original and one for writing the crunched text. When spaces and REMs are read they are just not written, so an expanding bubble moves through the basic text leaving behind it the crunched version. The write address is back-tracked over trailing colons and over the link and line no of any lines that disappear altogether.

On this pass also all GOTO, GOSUB, ON or THEN tokens are trapped and the object line no is read, this is looked up in the table (a fast "binary search" process) if it is there then the new line no, is written, otherwise the old one goes in. Here is a possible snag, if new numbers are often longer than ones, the write address could catch up with the read address-catastrophe! but you can avoid ths by putting a nice long REM at the start of your BASIC program.

Program

```
0 REM ********************************
1 REM *     *** CRUNCHER/LOAD***     *
2 REM *                              *
3 REM *          PETER ORMAN         *
4 REM ********************************
10 L= 49152:EN=20:LN=1000:GOSUB200
20 L= 49664:EN=11:LN=2000:GOSUB200
30 L= 49840:EN=20:LN=3000:GOSUB200
40 L= 50176:EN=11:LN=4000:GOSUB200
50 L= 50432:EN=10:LN=5000:GOSUB200
60 PRINT " TO USE TYPE NEW THEN LOAD  "
70 PRINT " THE PROGRAM TO BE CRUNCHED"
80 PRINT " THEN TYPE SYS49152 "
90 PRINT " WHEN THE SCREEN SHOWS CLR "
100 PRINT " AND READY THEN SAVE THE "
110 PRINT " CRUNCHED PROGRAM UNDER A "
120 PRINT " DIFFERENT NAME " : PRINT
130 PRINT " IF YOU GET A MESSAGE "
140 PRINT " YOU MAY RECRUNCH THE "
150 PRINT " CRUNCHED PROGRAM"
160 END
200 FOR X=0 TO  EN :T=0:FOR Y=0 TO 14
210 READ A:IF A <0 OR A >255 THEN 240
220 POKE L,A:L=L+1:T=T+A:NEXT
230 READ A:T=T-(INT(T/256)*256)
240 IF T<>A THEN PRINT"DATA ERROR IN LINE"LN+(X*10)"CHECKSUM <>"A:STOP
250 PRINT LN+(X*10)"OK":NEXT:RETURN
260 :
1000 DATA 032,176,194,032,091,195,024,165,043,105,255,133,253,133,251, 034
1010 DATA 165,044,105,255,133,254,133,252,169,000,133,100,133,099,141, 068
1020 DATA 045,193,162,004,032,246,192,032,217,192,202,208,247,165,251, 084
1030 DATA 141,039,193,165,252,141,040,193,032,246,192,201,000,240,057, 084
1040 DATA 166,099,208,245,201,143,208,012,032,011,193,144,236,024,162, 036
1050 DATA 001,134,099,016,229,201,032,208,010,166,100,240,003,032,217, 152
1060 DATA 192,024,144,215,032,217,192,201,034,208,007,056,169,001,229, 129
1070 DATA 100,133,100,024,032,000,196,144,195,024,144,171,160,000,132, 019
1080 DATA 099,132,100,140,045,193,177,251,201,058,208,005,162,001,032, 012
1090 DATA 229,192,165,251,205,039,193,208,014,165,252,205,040,193,208, 255
1100 DATA 007,162,004,032,229,192,144,005,169,000,032,217,192,160,001, 010
1110 DATA 177,253,208,201,200,177,253,208,196,169,000,032,217,192,032, 211
1120 DATA 217,192,165,251,105,001,133,045,165,252,105,000,133,046,032, 050
1130 DATA 115,195,032,051,165,160,000,185,041,193,153,119,002,200,192, 011
1140 DATA 004,208,245,132,198,024,096,230,251,208,002,230,252,160,000, 192
1150 DATA 145,251,024,096,134,101,056,165,251,229,101,133,251,165,252, 050
1160 DATA 233,000,133,252,024,096,230,253,208,002,230,254,160,000,177, 204
1170 DATA 253,201,058,176,006,056,233,048,056,233,208,096,165,251,205, 197
1180 DATA 039,193,208,019,165,252,205,040,193,208,012,174,183,195,208, 246
1190 DATA 004,032,217,192,096,206,183,195,056,096,083,009,067,076,082, 058
1200 DATA 013,000,000,000,000,000,000,000,000,000,000,000,000,000,000, 013
1210 :
2000 DATA 165,122,141,172,194,165,123,141,173,194,165,020,133,122,165, 147
2010 DATA 021,133,123,032,121,000,032,107,169,173,172,194,133,122,173, 169
2020 DATA 173,194,133,123,024,096,160,007,165,021,217,156,194,144,013, 028
2030 DATA 208,015,165,020,136,217,156,194,144,004,200,176,004,136,136, 119
2040 DATA 016,232,169,000,141,164,194,192,000,144,026,185,156,194,133, 154
2050 DATA 035,136,185,156,194,133,034,032,114,194,174,164,194,157,166, 020
2060 DATA 194,238,164,194,136,016,230,165,020,024,105,048,174,164,194, 018
2070 DATA 157,166,194,232,142,165,194,024,096,162,000,165,021,197,035, 158
2080 DATA 144,014,208,006,165,020,197,034,144,006,232,032,141,194,144, 145
2090 DATA 238,138,024,105,048,096,056,165,020,229,034,133,020,165,021, 212
2100 DATA 229,035,133,021,024,096,010,000,100,000,232,003,016,039,000, 170
```

```
2110 DATA 000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000, 000
2120 :
3000 DATA 169,000,141,182,195,141,183,195,032,091,195,165,043,133,102, 175
3010 DATA 165,044,133,103,169,255,133,104,169,207,133,105,165,102,024, 219
3020 DATA 105,004,133,122,165,103,105,000,133,123,024,032,121,000,201, 091
3030 DATA 143,240,069,173,182,195,240,030,160,002,177,102,133,106,200, 104
3040 DATA 177,102,133,107,160,001,165,106,145,104,200,165,107,145,104, 129
3050 DATA 200,200,200,206,182,195,208,239,160,000,177,102,170,200,177, 056
3060 DATA 102,133,103,134,102,208,186,024,165,104,105,001,141,184,195, 095
3070 DATA 165,105,105,000,141,185,195,024,032,115,195,096,162,000,160, 144
3080 DATA 003,177,102,129,104,056,165,104,233,001,133,104,165,105,233, 022
3090 DATA 000,133,105,024,136,177,102,129,104,056,165,104,233,003,133, 068
3100 DATA 104,165,105,233,000,133,105,238,182,195,238,183,195,208,174, 154
3110 DATA 032,139,195,076,197,195,160,011,165,122,153,186,195,136,165, 079
3120 DATA 123,153,186,195,136,185,098,000,153,186,195,136,208,247,096, 249
3130 DATA 160,011,185,186,195,133,122,136,185,186,195,133,123,136,185, 223
3140 DATA 186,195,153,098,000,136,208,247,096,056,173,183,195,237,182, 041
3150 DATA 195,141,183,195,173,182,195,162,000,142,182,195,010,046,182, 135
3160 DATA 195,234,010,234,046,182,195,056,101,104,141,184,195,165,105, 099
3170 DATA 109,182,195,141,185,195,096,000,238,232,207,000,000,192,000, 180
3180 DATA 000,000,000,144,191,254,002,169,207,160,195,032,030,171,076, 095
3190 DATA 033,195,147,032,017,017,017,083,079,077,069,032,082,069,077, 002
3200 DATA 083,032,076,069,070,084,032,073,078,000,000,000,000,000,000, 085
3210 :
4000 DATA 201,203,240,032,201,137,240,028,201,141,240,024,201,167,240, 192
4010 DATA 011,201,145,208,005,162,001,142,045,193,024,096,032,099,196, 024
4020 DATA 144,014,032,148,196,096,032,099,196,144,005,032,217,192,144, 155
4030 DATA 246,032,110,196,176,005,032,125,196,240,013,032,148,196,032, 243
4040 DATA 246,192,176,005,032,217,192,144,246,032,148,196,174,045,193, 190
4050 DATA 208,001,096,032,099,196,144,219,201,044,208,005,032,217,192, 102
4060 DATA 144,242,162,000,142,045,193,240,189,032,246,192,144,005,201, 129
4070 DATA 032,240,247,056,096,165,253,133,020,165,254,133,021,032,000, 055
4080 DATA 194,032,000,197,096,032,246,192,144,251,032,036,194,162,000, 016
4090 DATA 189,166,194,032,217,192,232,236,165,194,208,244,096,072,024, 157
4100 DATA 165,253,105,255,133,253,165,254,105,255,133,254,104,024,096, 250
4110 DATA 000,000,000,000,000,000,000,000,000,000,000,000,000,000,000, 000
4120 :
5000 DATA 173,184,195,141,155,197,173,185,195,141,156,197,169,000,141, 098
5010 DATA 157,197,133,104,133,105,169,208,141,158,197,024,165,104,141, 088
5020 DATA 159,197,165,105,141,160,197,173,157,197,109,155,197,133,104, 045
5030 DATA 173,158,197,109,156,197,133,105,102,105,102,104,169,252,037, 051
5040 DATA 104,133,104,165,105,205,160,197,208,007,165,104,205,159,197, 170
5050 DATA 240,063,160,003,177,104,197,021,144,033,208,009,136,177,104, 240
5060 DATA 197,020,144,024,240,046,165,104,141,155,197,165,105,141,156, 208
5070 DATA 197,201,207,208,172,165,104,201,252,208,166,240,022,165,104, 052
5080 DATA 141,157,197,165,105,141,158,197,205,185,195,208,149,165,104, 168
5090 DATA 205,184,195,208,142,056,096,160,000,177,104,133,020,200,177, 009
5100 DATA 104,133,021,024,096,232,000,000,000,000,000,000,000,000,000, 098
```

REVIEW

Machine Language for the Commodore 64, 128 and other Commodore Computers

By Jim Butterfield
A Brady Book

£13.00

One of the best ways to learn is by doing. Here is a book that encourages just that. It explains a topic and then talks you through a 'live' example which you type in yourself. At the end of each chapter there is a summary of the things you have learnt and a question an projects section. This is where you are given a chance to see if what you think you have learnt matches up with the reality. The projects get you to experiment and verify your new found knowledge. Most machine language books are either micro-processor specific ie 6502, Z80 etc. or are for a single microcomputer. Jim's book, however, covers just about every computer ever made by Commodore except the Amiga. Although these micros are all very different in appearance and in capabilities they all have one factor in common. They all use the 6502 micro-processor or a derivative thereof. The fact that Jim has decided to cover all the machines in one book has a number of advantages: 1) Comparisons between the various machines help give a better picture of how micro-computers work. 2) Some of the computers mentioned are now not that popular and could probably not warrant books of their own. 3) Many Commodore owners have upgraded at some time and many well have programmes on earlier machines they would like to convert to work on their new ones. The reference section alone could justify the purchase of this book for that sole purpose. 4) If, like myself, someone has more than one machine for whatever reason, it beats having to buy more than one book!

The book is split roughly in half. The first half is the tutorial, whilst the second is an excellent reference guide which could almost have been sold as a book in itself. It contains memory maps for the original Pet, BASIC 4.0 systems, Vic 20, Commodore 64, Plus 4 (C-16), the B series and Commodore 128. There are also maps and additional information on many of the support and peripheral chips etc. The differences between the machines is expanded on here and routines to make use of their differing facilities are included.

This book will definitely be found a space in my library. I found it easy going without the "now who's a clever body then" dialogue so often found in books of this type. The only criticism I have is one I have found applied to EVERY machine language book I have ever read. The first chapter is always about something like Buses (not big red ones) A.L.U.'s, two's compliment and such like. It's not that I don't think it should be included but that it shouldn't be at the beginning as it frightens many people off.

They start reading a book about machine language and they are immediately presented with complex looking diagrams of the internal workings of C.P.U.s etc. and intense explanations of Boolean algebra. In reality many of these subjects could be left until later when the reader has overcome the sheer terror at the prospect of learning MACHINE CODE. That said, this is a superb book, written by the master himself and one that I can honestly say I would recommend to my friends.

I.B.

Program

REVERSE CHARACTER

by J. Consadine

C-64

This is a small interrupt driven routine to flash continuously every occurrence of a selected character. It is very useful indeed for warnings and highlighting etc.

```
10 REM ************************
11 REM *                      *
12 REM *  REVERSE CHARACTER   *
13 REM *                      *
14 REM * J.CONSADINE JUNE 87  *
15 REM *                      *
16 REM *                      *
17 REM * TURN ON -SYS 49198   *
18 REM * TURN OFF-SYS 49217   *
19 REM *                      *
20 REM ************************
21 :
60 CX=0:FOR X=0 TO 77:READ A:POKE 49152+X,A:CX=CX+A:NEXT
70 IF CX<>10797 THEN PRINT"ERROR IN DATA":STOP
80 POKE 49169,42:POKE49173,170:SYS 49198:LIST-20
100 DATA 198,254,208,039,162,000,134,251,162,004,134,252
110 DATA 160,000,177,251,201,036,240,004,201,164,208,004
120 DATA 073,128,145,251,200,208,239,230,252,166,252,224
130 DATA 008,208,231,165,253,133,254,076,049,234,169,015
140 DATA 133,253,133,254,120,169,000,141,020,003,169,192
150 DATA 141,021,003,088,096,120,169,049,141,020,003,169
160 DATA 234,141,021,003,088,096


10 REM ASCII CODE GENERATOR
12 :
15 REM J.CONSADINE JUNE 87
20 :
25 INPUT"WHICH CHARACTER";A$
30 NR=ASC(A$):IF NR>128 THEN NR=NR-128
35 RE=NR+128
40 PRINT"NON-REV CODE="NR
50 PRINT"REV.CODE="RE
60 :
65 REM USE OPTIONAL LINE BELOW TO
68 REM ACTIVATE ABOVE CHARACTER DIRECT
69 :
70 REM POKE49169,NR:POKE49173,RE
80 END
```

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May '86 need to complete my collection. Can you help? Please send reply to CCI for the attention of Margaret Ress.

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C64 penpals wanted send lists to Dean Phillips, 8 Heulwen Terrace, Llanerch, Llanelli, Dyfed, South Wales, SA15 3RP. Disk or tape.

C64 penpals wanted all over the world to exchange information, programs, etc. answer 100%. Enclose a S.A.E. to Bryan Pettiarove, Westernport Road, Heath Hill, 3981 Victoria, Australia.

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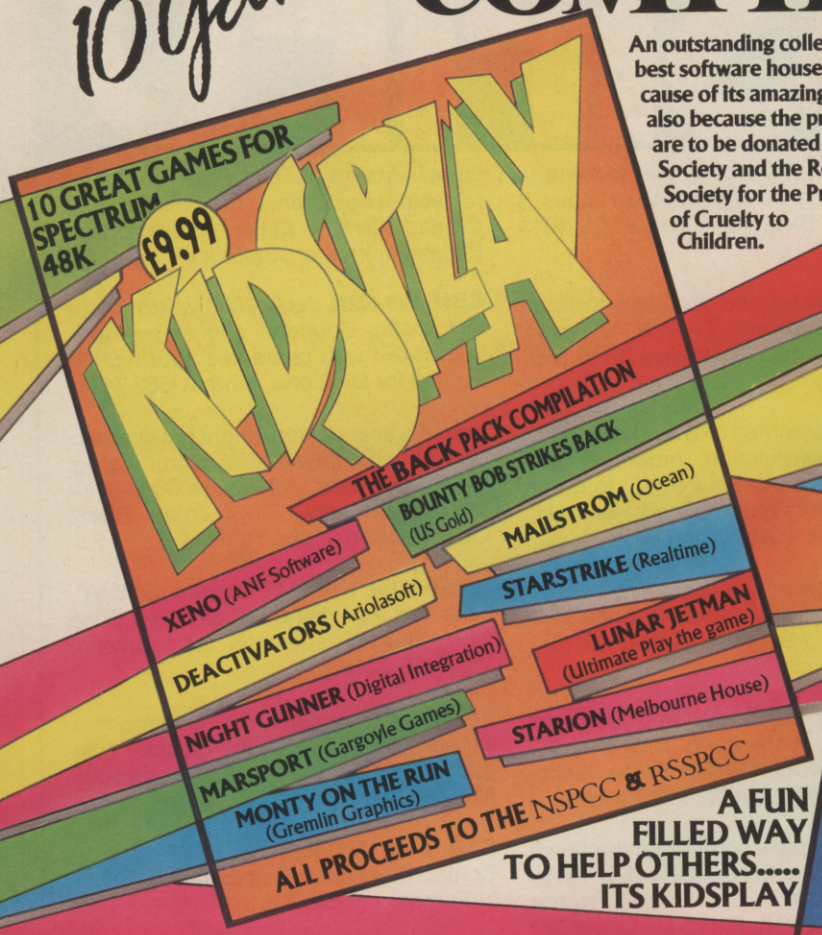

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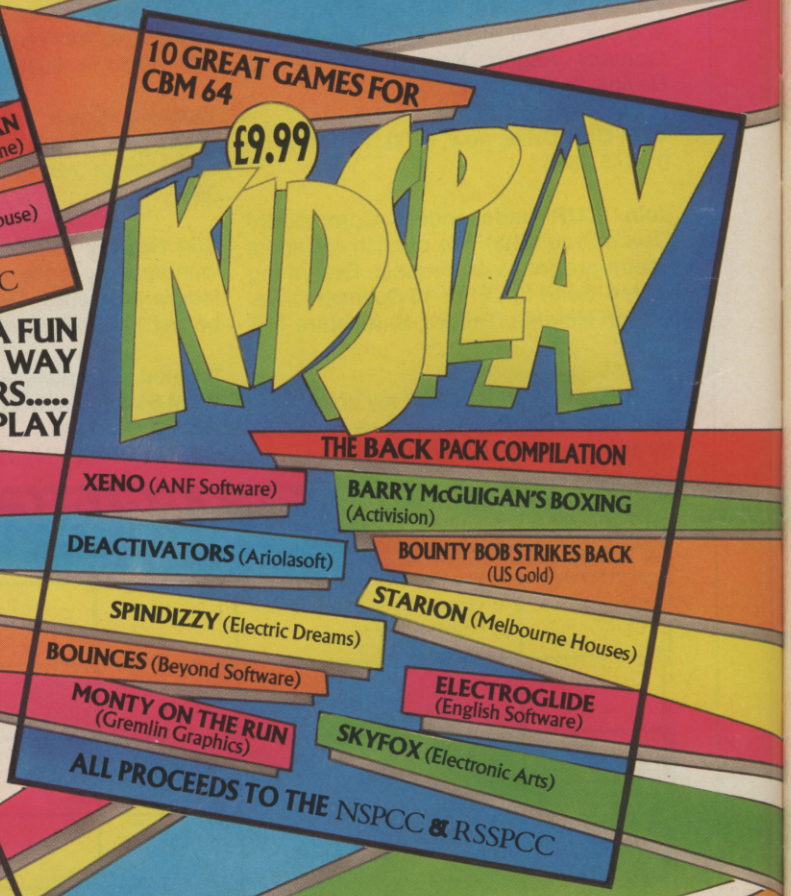

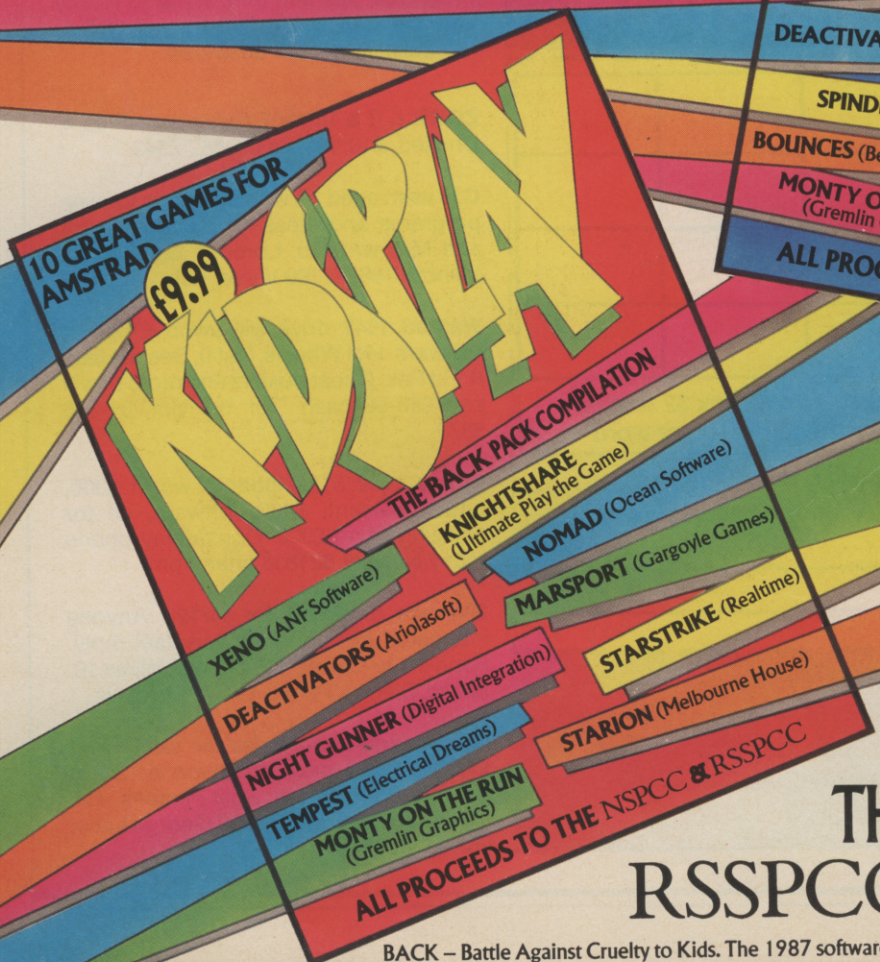

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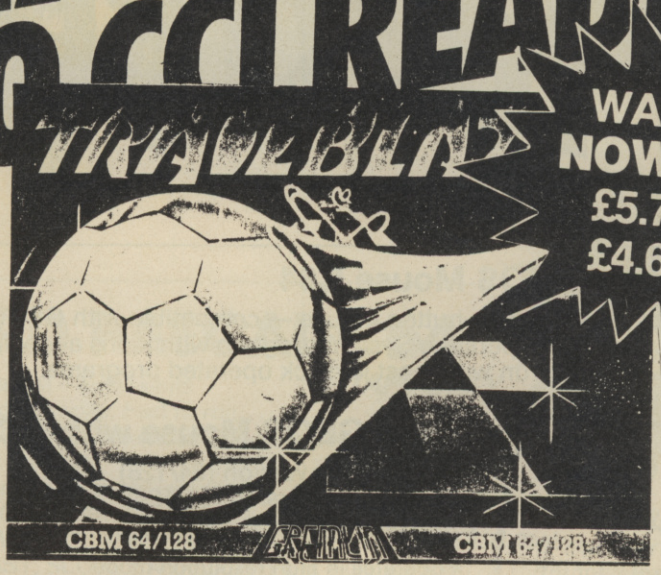

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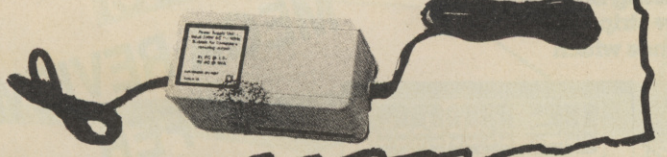

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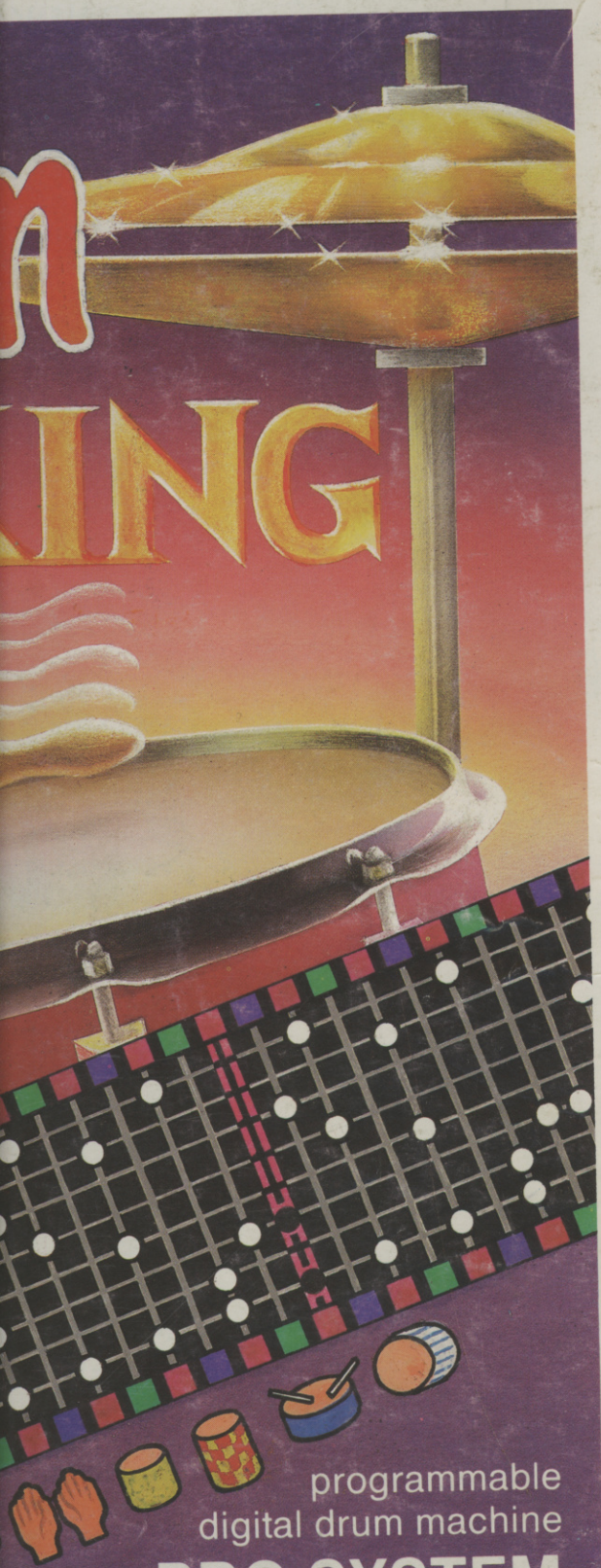

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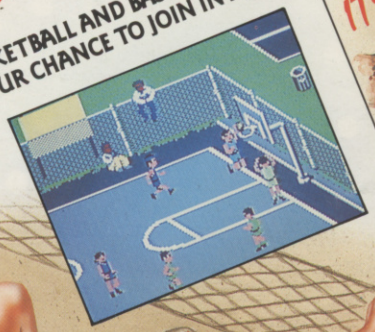

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